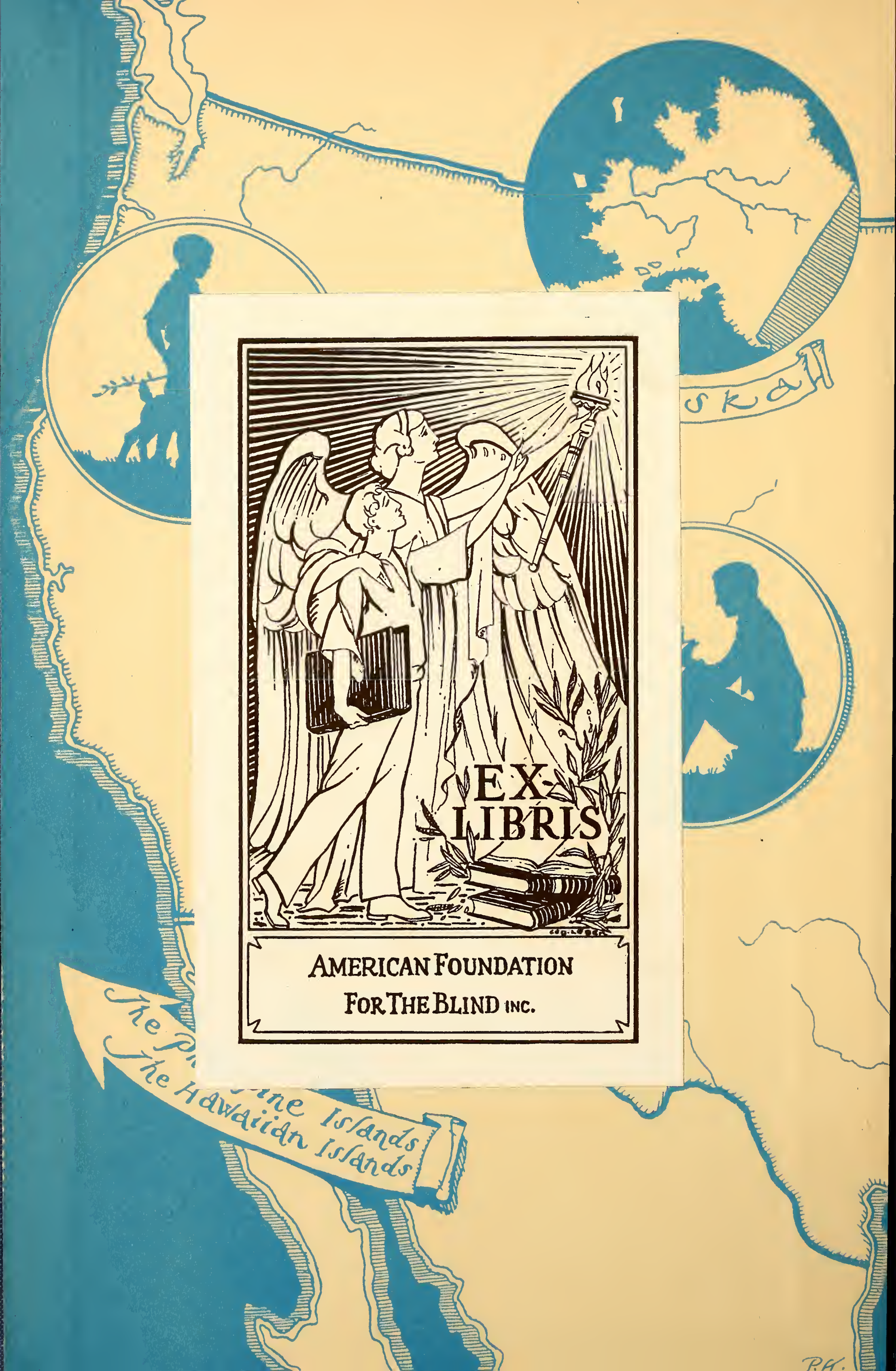

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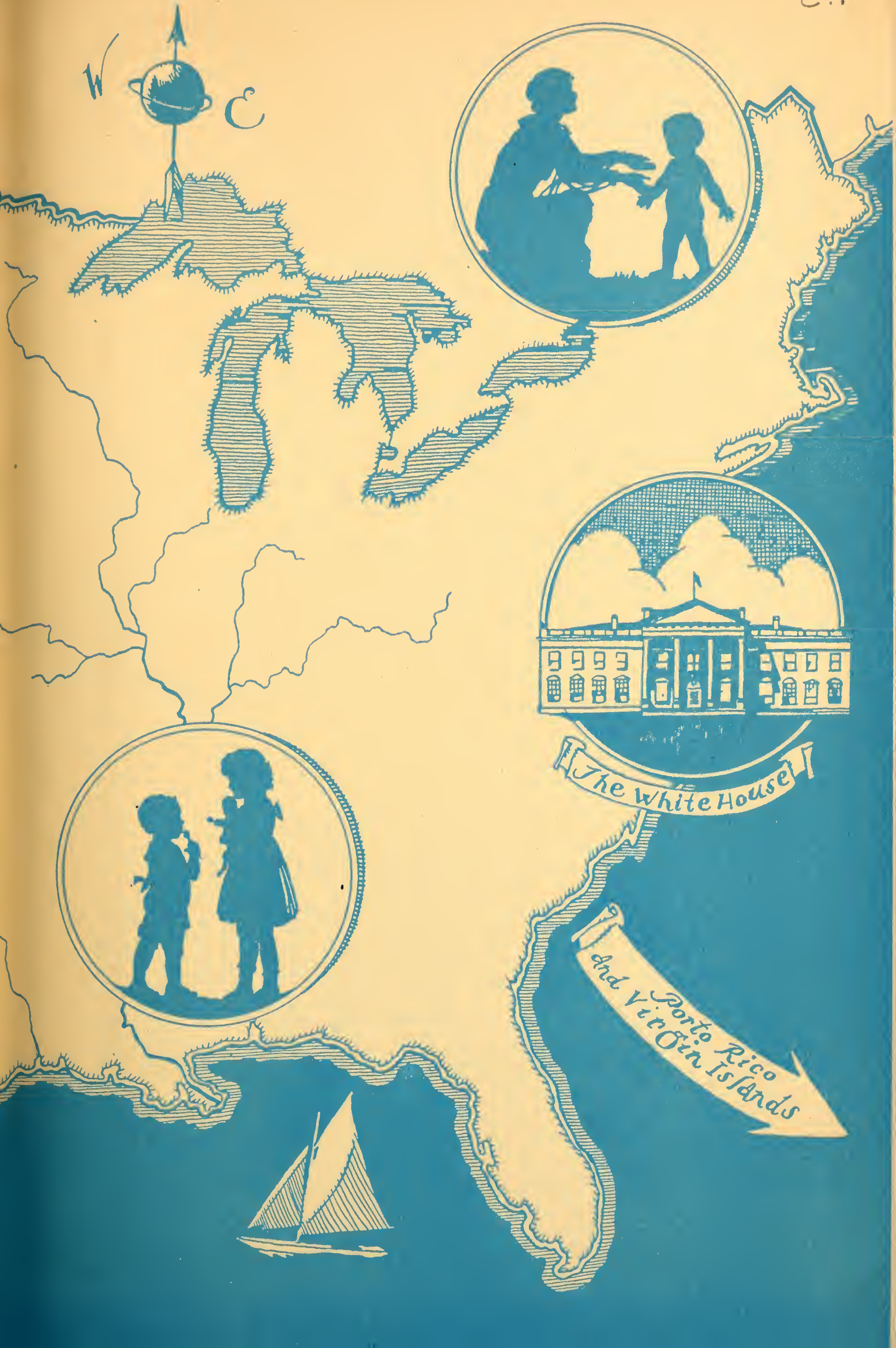

WHITE HOUSE CONFERENCE
ON CHILD HEALTH AND
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PRESIDENT HOOVER

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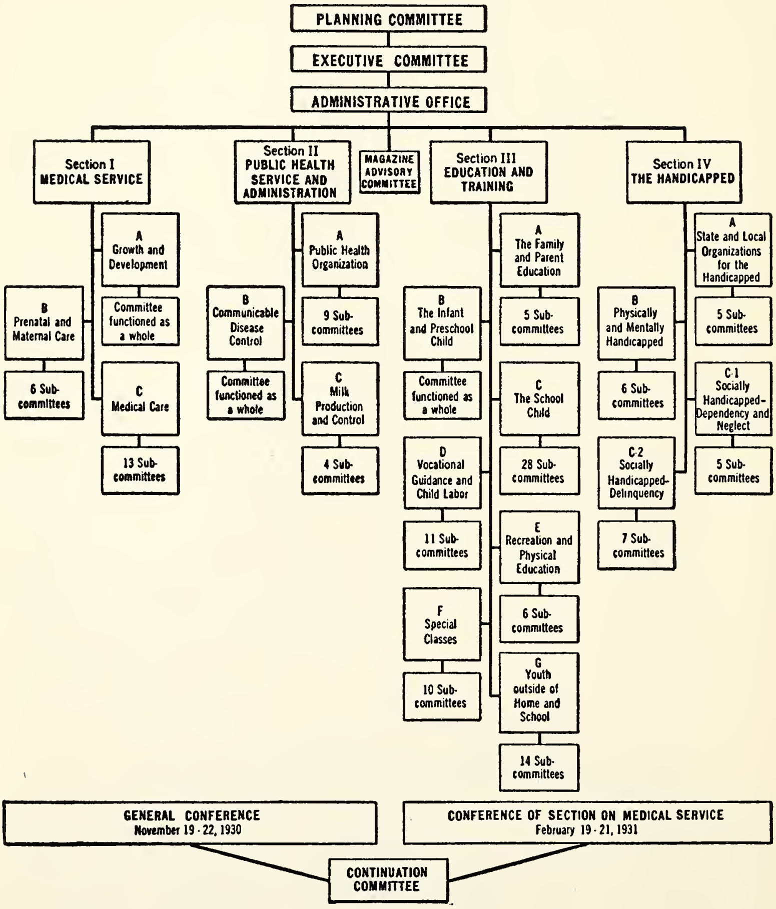
# WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION

Called by President Hoover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EXECUTIVE COMMITTEE
ADMINISTRATIVE OFFICE
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A Growth and Development
Committee functioned as a whole
B Prenatal and Maternal Care
6 Sub-committees
C Medical Care
13 Sub-committees
Section II PUBLIC HEALTH SERVICE AND ADMINISTRATION
A Public Health Organization
9 Sub-committees
B Communicable Disease Control
Committee functioned as a whole
C Milk Production and Control
4 Sub-committees
MAGAZINE ADVISORY COMMITTEE
Section III EDUCATION AND TRAINING
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5 Sub-committees
B The Infant and Preschool Child
Committee functioned as a whole
C The School Child
28 Sub-committees
D Vocational Guidance and Child Labor
11 Sub-committees
E Recreation and Physical Education
6 Sub-committees
F Special Classes
10 Sub-committees
G Youth outside of Home and School
14 Sub-committees
Section IV THE HANDICAPPED
A State and Local Organizations for the Handicapped
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B Physically and Mentally Handicapped
6 Sub-committees
C-1 Socially Handicapped-Dependency and Neglect
5 Sub-committees
C-2 Socially Handicapped-Delinquency
7 Sub-committees
GENERAL CONFERENCE November 19-22, 1930
CONFERENCE OF SECTION ON MEDICAL SERVICE February 19-21, 1931
CONTINUATION COMMITTEE

# SECTION II—PUBLIC HEALTH SERVICE AND ADMINISTRATION

HUGH S. CUMMING, M.D., *Chairman*

---

*Committee on*

## COMMUNICABLE DISEASE CONTROL

GEORGE H. BIGELOW, M.D., *Chairman*

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# COMMUNICABLE DISEASE CONTROL

IX. For every child a community which recognizes and plans for his needs, protects him against physical dangers, moral hazards, and disease; . . .

XIX. To make everywhere available these minimum protections of the health and welfare of children, there should be a district, county, or community organization for health, education, and welfare, with full-time officials, coordinating with a state-wide program which will be responsive to a nation-wide service of general information, statistics, and scientific research. This should include:

(a) Trained, full-time public health officials, with public health nurses, sanitary inspection, and laboratory workers

(b) Available hospital beds

(c) Full-time public welfare service for the relief, aid, and guidance of children in special need due to poverty, misfortune, or behavior difficulties, and for the protection of children from abuse, neglect, exploitation, or moral hazard

*From* THE CHILDREN'S CHARTER.

# COMMUNICABLE DISEASE CONTROL

REPORT OF THE COMMITTEE ON
COMMUNICABLE DISEASE CONTROL
GEORGE H. BIGELOW, M.D., *Chairman*

WHITE HOUSE CONFERENCE ON
CHILD HEALTH AND PROTECTION

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*Dedicated to*

THE CHILDREN OF AMERICA

WHOSE FACES ARE TURNED TOWARD THE LIGHT
OF A NEW DAY AND WHO MUST BE PREPARED TO
MEET A GREAT ADVENTURE

# SECTION II

# PUBLIC HEALTH SERVICE AND ADMINISTRATION

Hugh S. Cumming, M.D., *Chairman*
Surgeon General, United States Public Health Service,
Washington, D. C.

## *COMMITTEE B*

## *COMMUNICABLE DISEASE CONTROL*

George H. Bigelow, M.D., *Chairman*
State Commissioner of Health, Boston, Mass.

James Wallace, M.D., *Field Secretary*
American Public Health Association, New York City

## COMMITTEE MEMBERS

This Committee functioned as a whole. The report was signed by the following members with the exceptions noted:

David Chester Brown, M.D., Member, Board of Trustees, American Medical Association, Danbury, Conn.

Henry D. Chadwick, M.D., City Health Department, Detroit, Mich.

A. J. Chesley, M.D.,* Associate Professor, Preventive Medicine and Public Health, University of Minnesota Medical School; Secretary, Conference of State and Provincial Health Authorities of North America; President, American Public Health Association; Secretary and Executive Officer, Minnesota State Board of Health, St. Paul, Minn.

W. W. Cort, Ph.D., Professor of Helminthology, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

Samuel J. Crumbine, M.D., General Executive, American Child Health Association, New York City.

Haven Emerson, M.D., Professor of Public Health Administration, College of Physicians and Surgeons, Columbia University, New York City.

* Dr. Chesley signed with certain comments as to detail which were received too late for incorporation.

**Edward S. Godfrey, Jr.**, M.D., Director, Division of Communicable Diseases, State Health Department, Albany, N. Y.

**James Payton Leake**, M.D., Medical Officer in Charge, United States Public Health Service Relief Station, Washington, D. C.

**George W. McCoy**, M.D.,* Director of Hygienic Laboratory, United States Public Health Service, Washington, D. C.

**William H. Park**, M.D., Director, Bureau of Laboratories, Department of Health; Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, New York City.

**Thomas Parran, Jr.**, M.D., State Health Commissioner, Albany, N. Y.

**George H. Ramsey**, M.D., Department of Epidemiology, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

**W. S. Rankin**, M.D., Director, Hospital and Orphans Sections, The Duke Endowment, Charlotte, N. C.

**Dennett L. Richardson**, M.D., Providence City Hospital, Providence, R. I.

**Milton J. Rosenau**, M.D., Department of Preventive Medicine and Hygiene, Harvard Medical School, Boston, Mass.

**Wilson G. Smillie**, M.D., Dr. P. H., Professor of Public Health Administration, Harvard University School of Public Health, Boston, Mass.

**William F. Snow**, M.D., President, National Health Council, New York City.

**Edgar Sydenstricker**, M.D., Director, Division of Research, Milbank Memorial Fund, New York City.

**Katharine Tucker**, R.N., General Director, National Organization for Public Health Nursing, New York City.

**Cornelia Van Kooy**, R.N., Director, Bureau of Public Health Nursing, State Board of Health, Madison, Wis.

**Henry F. Vaughan**, Dr. P. H., Commissioner of Health, Detroit, Mich.

**Borden S. Veeder**, M.D., Professor of Clinical Pediatrics, Washington University School of Medicine, St. Louis, Mo.

**Ennion G. Williams**, M.D.,† State Health Commissioner, Richmond, Va.

**Edwin B. Wilson**, Ph.D., Professor of Vital Statistics, Harvard University School of Public Health, Boston, Mass.; President, Social Science Research Council, New York City.

---

* Dr. McCoy feels that under "Scarlet Fever," "Specific Therapy," page 176, there should be inserted the word "probably," to read: "The use of potent scarlet fever antitoxin probably is of value in shortening the course of the disease."

† Died June 6, 1931.

# ACKNOWLEDGMENTS

THE Committee is profoundly indebted to Dr. James Wallace, who as Field Secretary collected and compiled under considerable pressure the data on which this report is based. To the American Public Health Association it is also indebted for making his services available for this purpose, as well as to the members of the United States Public Health Service staff, to other organizations, and to the very large number of especially well qualified persons who furnished a wide variety of data.

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# COMMUNICABLE DISEASE CONTROL

# COMMUNICABLE DISEASE CONTROL

## FACTORS IN CONTROL

THE purpose of this report is: first, to point out the importance of the control of communicable diseases among children; second, to review the current control practices; third, to recommend those practices which seem most valuable; and, fourth, to suggest the fields in which further study is most urgently needed. The report is particularly for the use of those responsible for communicable disease control in this country. It can be interpreted by them to the general public, without whose support no effective control is possible.

*Prevalence of Communicable Diseases.* Nearly three million cases of communicable diseases are reported in this country annually, and of course many more are never reported. About half of these occur in children. These diseases furnish about 15 per cent of total deaths. In addition to the deaths and the economic and social losses from cases, one must add the permanent disabilities resulting from communicable diseases which may handicap the child through his entire life. From 50 per cent to 75 per cent of our crippled children owe their condition to infantile paralysis and tuberculosis. Blindness, damaged hearts and kidneys, increased susceptibility to other infections, are all found in the wake of communicable diseases among children. Economic and humanitarian motives alike demand that every known effective means of control be fully utilized and that further studies to increase our knowledge be expedited.

*Practicing Physicians.* Adequate medical service readily available is fundamental for proper communicable disease control. Physicians are constantly making noteworthy contributions to public health, and as the professional group who personally minister to cases of communicable disease, and by the instruction which they give, they reduce tremendously the possibility of infection.

*Public Health Nursing.* Public health nurses can be, and are, one of the most important agents in the administrative machinery of communicable disease control. Through the home, the health center, the school, and other points of contact, they can reach both parents and children in an exceptionally intimate way. They can assist in early detection of disease, in initiating procedures for prevention, and in definite follow-up measures. The nurses are often the first persons with some knowledge of disease to see a real or suspected case, and from their knowledge of control methods, as well as their intimate contact with the homes in the community, are able in a special way to give effect to community measures for control.

*Organization.* There are certain fundamental matters which are of general significance in any consideration of communicable disease control. To be most effective we should have knowledge of the particular disease in respect to its causation, recognition, mode of transmission, and also concerning methods of active immunization and specific therapy. This means prompt reporting, particularly the first cases in an outbreak, when adequate isolation of cases and contacts gives the greatest promise of control. There must be an effective administrative organization with professional personnel that can provide: (1) facilities for such services as the diagnostic laboratories; (2) prompt investigation of sources of infection; (3) suitable hospitalization; (4) a consistent educational program aimed at raising and maintaining popular support for sound control practices; and also have resources for specific therapy. This means adequately trained, full-time health service for federal, State, urban, and rural units. Without such facilities and personnel, all efforts toward the control of communicable diseases are handicapped to an extent that is but little realized outside of professional public health circles.

*Epidemiology.* Adequate organization requires provision for competent epidemiological investigation of every case of any communicable disease in which serious effort to control is to be made. A sound basis of control depends upon knowledge of each individual case, its source of infection, its contacts and potential contacts, as well as the social and environmental factors.

*Recognition and Reporting.* The recognition and reporting of communicable diseases is the first step towards control. For this reason, parents, teachers, industrial executives, and others, under any suspicious circumstances, have a definite public responsibility to secure competent medical opinion. On the physicians must rest the special responsibility for the authoritative, immediate reporting of the individual case.

*Isolation and Quarantine.* To repeat, the isolation of cases and quarantine of contacts are most effective as control measures early in an outbreak, and therefore prompt and adequate reporting is especially important. But even so, it must be admitted that isolation and quarantine have proven to be profoundly disappointing in the control of the common communicable diseases of childhood. The first reason is because so large a proportion of the spread has been accomplished by the time the disease is recognized clinically. The second reason is that public support of isolation and quarantine of the familiar diseases of childhood is, in general, indifferent. For these reasons such artificial active immunizing agents as are available must be fully utilized since a non-susceptible population is the greatest assurance against epidemics of a disease. However, it must be emphasized that selective isolation and quarantine which protect the young child from measles, the pregnant woman from scarlet fever, and the aged invalid from "colds" and influenza, are effective, and these procedures must be utilized fully until more effective means for prevention are known to us.

*Hospitalization.* Hospital facilities are essential: first, to provide a place to care for those sick with contagious diseases who cannot be cared for properly at home, or who can secure better treatment through the facilities available in a hospital; second, to prevent spread of infection when contagious disease patients cannot be isolated effectively at their place of residence; and, third, for diseases which are both highly virulent and highly communicable. Hospitalization is of particular value in breaking contact between cases and food handlers, particularly those having to do with milk and milk products. Hospitalization, except for treatment and in the special circumstances outlined above, is not necessary where proper isolation of the patient can be secured at home and the parents are cooperative.

*Placarding and Fumigation.* Placarding of the premises where communicable disease exists is of some value in a few diseases. (Otherwise it has no value as a control measure!) Gaseous disinfection, properly controlled, is effective in killing insects and animals known to be capable of carrying or transmitting infection. Otherwise it is of no value as a control measure and has been abandoned by all public health officials who are abreast of the times.

*Carriers of Disease.* The control of carriers is one of the most perplexing problems which confront health officers. A carrier of disease is generally taken to mean a person who carries the causative agent and can therefore communicate it to others, while he himself exhibits no characteristic symptoms of the disease. Most persons convalescing from disease are temporary carriers, but a considerable number of persons continue to be carriers when convalescence is complete, and some are found to be carriers who have no knowledge of ever having contracted the disease.

Both these groups create difficult problems for health administrators—the problem of discovery, and the problem of adequate control. In typhoid fever, the carrier problem is now seen to be of great importance in connection with its control, while for other diseases, such as diphtheria, scarlet fever, syphilis, gonorrhea, and dysentery, studies have shown the problem to be of far greater significance than was formerly supposed.

Among the methods of control are:

(1) Discovery of the carrier
(2) Record of his occupation and movements
(3) Proper instruction of carrier

(4) Agreement on the part of the carrier (a) to refrain from handling milk and other foods, and (b) to observe certain personal essential sanitary rules
(5) Employment of any method that may lead to cure of the carrier condition.

*Research.* Increased knowledge is essential for increased effectiveness in control practice. This means generous, intelligent support of those agencies situated strategically in regard to laboratory and field resources, for those agencies are our chief source of new information and are most valuable critics of outworn practice. Such factors as etiology, mode of spread, specific immunization and therapy, the too little known economic and social factors in disease transmission, and the like, must be investigated, so that the health officer may have control measures of proven value for each disease, rather than the shotgun control so often ineffectively practiced at present.

*Education.* Finally, it must be repeatedly emphasized that, except during an epidemic of a generally apprehended disease when the public will tolerate and often demand police procedure, the health officer must depend for effective control on an informed, cooperative public. Such a happy situation will result only from thoughtful, long-continued education. It would seem that the White House Conference on Child Health and Protection was most admirably calculated to contribute conspicuously in this field.

# PREVALENCE AMONG CHILDREN

## Indications of Comparative Prevalence and Problems Involved

THE diseases referred to in the following study are for the most part those which are transmissible from a person who is infected with the disease, is recovering from it, or is a carrier of the causative agent, to some other person who is susceptible. The transmission may be direct, through personal contact, or occasionally through the medium of an object or living thing which becomes contaminated and after such contamination comes in contact (usually immediately, if inanimate objects) with a susceptible person.

The diseases which particularly affect children are set forth in the figures following on morbidity and mortality. There are some diseases, such as measles, to which practically every person whether old or young who has not had the disease is susceptible. There are others such as German measles, chickenpox, and whooping cough which are readily contracted by the young, but not so readily by the adult. In most cases in the ordinary course of events the adult has had these diseases early in life, although not infrequently there may be no knowledge of having contracted them, the attacks being so mild that they were unnoticed. The fatality rates (the number of deaths per 100 cases) are much higher in the lower age groups for a number of communicable diseases; whooping cough, for example, which accounts for a comparatively large number of deaths. The child has not had time to build up strength of body or resisting power and lacks "the first line of defense, which is a healthy, well-nourished and resistant human body." * A few other diseases, such as mumps, do not usually result in serious complications in the

---

* Sir George Newman, *Outline of Preventive Medicine.*

young child while they frequently do in the adolescent or adult.

The fact that for a number of communicable diseases like whooping cough and bronchopneumonia, the infant at birth has little or no immunity and that no definite specifics for prevention are available, causes a heavy infant mortality and makes such diseases especially difficult to handle. For some other communicable diseases which strike hardest at a slightly older group—the preschool children—such as diphtheria, measles, and scarlet fever, there are more definite specific preventives available, but this group of children is frequently one of the most difficult to include in any kind of preventive program. These children are not yet in school and they are no longer babies in arms taken regularly to their physician or to clinics. The figures on mortality and morbidity show that to this group special consideration should be given. The health centers now becoming more generally established in the larger cities and in some rural communities may help to bridge the gap between infancy and school age for the use of specific preventive measures, as well as for other health procedures for the protection of the child.

School children are the group most easily reached. The school was at one time regarded as a place of opportunity for children to contract disease. It is now known that a school with proper health supervision, ordinarily, is one of the safest places for the child.

As set forth in the introduction, there are certain fundamentals necessary to make progress in the control of any communicable disease, and as will be shown in the section on the control of individual diseases, there are not only general, but specific measures to be followed for each individual disease.

The table on pages 15 to 20 will show which of the diseases cause the greatest number of deaths in the registration area of the United States.

The fact that bronchopneumonia, tuberculosis, and lobar pneumonia stand at the top of the table indicates, in our present state of knowledge of disease, how relatively important are: (1) the fitness of the individual to resist disease if exposed to it; (2) the avoidance of unnecessary exposure; (3) the prompt recognition of the disease if contracted; and (4) adequate provision for the treatment of the case and protection of others. In most of the communicable diseases causing a large number of deaths among young people the cooperation of the individual and the family concerned and the service of the medical attendant, exceed in importance all specific measures for their control or reduction. Alertness, promptness, and adequate precautions on the part of the parent can often not only avert communicable disease, but modify its course in the child who may have contracted it.

If communicable diseases are classified according to the greatest number of deaths in the different age groups, the order for the chief diseases in the under one year age group is: bronchopneumonia, lobar pneumonia, influenza (all forms), whooping cough, syphilis, measles, and tuberculosis (all forms). If age group one to four is considered, the order is: bronchopneumonia, diphtheria, lobar pneumonia, influenza (all forms), measles, whooping cough, and tuberculosis (all forms). For age group five to nine, the order is: diphtheria, tuberculosis (all forms), lobar pneumonia, influenza (all forms), bronchopneumonia, measles, and scarlet fever. For age group ten to fourteen, the order is: tuberculosis (all forms), lobar pneumonia, influenza (all forms), typhoid fever, diphtheria, bronchopneumonia, tetanus, scarlet fever, poliomyelitis, measles, and meningococcus meningitis. For age group fifteen to nineteen, the order is: tuberculosis (all forms), lobar pneumonia, influenza (all forms), typhoid fever, bronchopneumonia, meningitis, malaria, measles, syphilis, scarlet fever, poliomyelitis, and diphtheria.

# DEATHS AMONG CHILDREN

## FEDERAL CENSUS FIGURES FOR THE YEARS 1926, 1927, 1928. COMMENTS ON TABLE

THE communicable diseases which have accounted for the greatest numbers of deaths among persons under twenty years of age in the registration area of the United States of America for the years 1926, 1927, and 1928 are shown in the table on pages 15 to 20. Bronchopneumonia, it will be seen, heads the list with almost twice the number of deaths charged against it as for any other single cause, tuberculosis standing second in the list, lobar pneumonia third, diphtheria fourth, and whooping cough fifth, when the totals for the three years are combined. Influenza, if complicated and unspecified cases are combined, stands fourth in the list. The seriousness of a disease, however, is not wholly determined by the number of deaths it may be responsible for, but rather by the degree of disability it causes, its tediousness or prolonged convalescence, and other handicaps resulting from it. The measure of a disease by its death rate, however, is one of the most accessible means of showing its seriousness.

The table shows the percentage of total deaths which belong to the under twenty year group and also the percentages for the ordinary age groupings under twenty, indicating where each disease takes its heaviest toll among the young.

*Bronchopneumonia* has an average of about 35 per cent of its total deaths under one year, 50 per cent under five years, and 54.9 per cent under twenty years.

*Tuberculosis* (*all forms*), while accounting for many deaths among the young, averages only about 16 per cent of its total deaths under twenty years, only 1.5 per cent under one year, and only 4.5 per cent under five years; yet the disease stands second among communicable diseases as a killer of those under twenty years.

*Lobar Pneumonia,* the "terror of the young and the friend of the aged," has about 22 per cent of its deaths in the under twenty age group, but only 9 per cent under one, and an average of less than 16 per cent under five years.

*Diphtheria* belongs to a group of diseases in which deaths are almost all among young persons. For the three years being studied, 94.3 per cent of all deaths were under twenty years, 7 per cent under one year, 58.5 per cent under five years, and 86.5 per cent under ten years.

*Whooping Cough* belongs to the same group of diseases which make fatal attacks upon children, but it strikes heavier on the very young than does diphtheria. In the three years for which data are submitted, 99.6 per cent of all deaths from whooping cough were under twenty years, 57.2 per cent were under one year, 95.9 per cent under five years, and 99.1 per cent under ten years.

*Influenza* (*with pulmonary complications*) attacks all ages, but 30.1 per cent of all deaths from this cause were under twenty years, 13.5 per cent under one year, and 23.0 per cent under five years.

*Measles* is another of the diseases which take their heaviest toll from the young. Ninety-four and five-tenths per cent of all deaths were under twenty years, 24.9 per cent under one year, 76.4 per cent under five years, and 88.2 per cent under ten years.

*Influenza* (*other and unspecified*) had an average of 29 per cent of its deaths under twenty years, 12.7 per cent under one year, 20.7 per cent under five years, and 23.8 per cent under ten years.

*Typhoid and Paratyphoid Fever* had 39.4 per cent of its deaths in the under twenty year group, only 0.6 per cent were under one year, 4.7 per cent under five years, and 11.7 per cent under ten years.

*Pneumonia* (*unspecified*) had an average of 48.7 per cent of its deaths under twenty years, 27.5 per cent under one year, and 40.4 per cent under five years.

*Syphilis* had an average of 24.5 per cent of its total deaths in the under twenty year group, 18.9 per cent in the under one year, 21.3 per cent under five years, and 21.9 per cent under ten years.

*Scarlet Fever.* This disease takes its greatest toll from the young, but not from the infant group. Eighty-five and five-tenths per cent of all deaths from scarlet fever were under twenty years, 4.8 per cent under one year, 43.6 per cent under five years, and 70.9 per cent under ten years. Very few deaths among colored people are reported as due to scarlet fever.

*Dysentery* had 26.9 per cent of its deaths under twenty years, only 2.5 per cent under one year, but 11.5 per cent under five years, and an average of 16.4 per cent under ten years.

*Meningococcus Meningitis* also hits hardest at the young, as an average of 72 per cent of all deaths were under twenty years, 16.8 per cent under one year, 39 per cent under five years, and 48.5 per cent under ten years.

*Malaria* had an average of 43.8 per cent of its deaths under twenty years, 9.3 per cent of them being under one year, 14.1 per cent one to four years, 23 per cent under five years, and 28.4 per cent under ten years.

*Poliomyelitis* (*acute*) is another disease that makes its attack especially on children. An average of 87.9 per cent of all deaths from the disease were under twenty years, 9.7 per cent of deaths were under one year, 42.1 per cent under five years, and 57.1 per cent under ten years.

*Tetanus.* Sixty-five and three-tenths per cent of all deaths from this disease are under twenty years (about 75 per cent of them males), 16.5 per cent are under one year, 23.1 per cent are under five years, and 40.2 per cent under ten years.

*Epidemic Encephalitis* does not take as great a proportion of deaths from the young as most of the diseases already named. Twenty-six and nine-tenths per cent of deaths due to the disease were under twenty years, an average of only 2.5 per cent under one year, with 11.5 per cent under five years, and 16.4 per cent under ten years.

*Gonorrheal Infection* had an average of 15.3 per cent of its deaths in the under twenty year group, with 3.8 per cent under one year, 4.3 per cent under five years, and 4.4 per cent under ten years.

*Mumps* had 61.3 per cent of all its deaths in the under twenty year group, 15.8 per cent under one year, 37.9 per cent under five years, and 50.2 per cent under ten years.

*Smallpox.* Because of the comparatively larger numbers of young people now being vaccinated, smallpox had an average of only 35.4 per cent of its deaths in the under twenty year group, an average of 14.9 per cent in the under one group, 21.3 per cent under five years, and 26 per cent under ten years.

*Rabies* corresponded closely to mumps with an average of 63.7 per cent of all deaths from the disease in the under twenty year group, but had no deaths under one year, an average of 16.9 per cent under five years, and 38.1 per cent under ten years.

The number of deaths among children for the other communicable diseases referred to in this report was comparatively small.

It will be noted that though the years 1926, 1927, 1928 differed in the number of deaths from the different diseases, there was very little difference in the percentage of deaths in the different age groups in each of the years, the percentage of each group being fairly constant, although there is a more general reduction in the percentages in the very young age groups than among the older.

## Table Showing the Communicable Diseases which Accounted for the Greatest Number of Deaths Among Persons Under Twenty Years of Age in 1926, 1927 and 1928 in the Registration Area of the United States

The comparative number and the per cent of the total in different young age groups as well as the total number for all ages is also shown

### Bronchopneumonia

| *Year* | *Deaths Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1926—Male | 14,170 | 9,172 | 4,219 | 415 | 173 | 191 | 23,389 |
| Female | 11,250 | 6,968 | 3,610 | 361 | 146 | 165 | 20,993 |
| Total | 25,420 | 16,140 | 7,829 | 776 | 319 | 356 | 44,382 |
| *Per cent of total* | 57.2 | 36.4 | 17.6 | 1.7 | 0.7 | 0.8 | 100.0 |
| 1927—Male | 10,718 | 70,061 | 2,909 | 405 | 147 | 196 | 18,972 |
| Female | 8,499 | 5,378 | 2,459 | 347 | 160 | 155 | 16,238 |
| *Total* | 19,217 | 12,439 | 5,368 | 752 | 307 | 351 | 35,210 |
| *Per cent of total* | 54.7 | 35.4 | 15.3 | 2.1 | 0.9 | 1.0 | 100.0 |
| 1928—Male | 12,950 | 8,461 | 3,591 | 462 | 205 | 231 | 23,366 |
| Female | 10,317 | 6,454 | 3,065 | 400 | 211 | 187 | 20,632 |
| *Total* | 23,267 | 14,915 | 6,656 | 862 | 416 | 418 | 43,998 |
| *Per cent of total* | 52.8 | 33.9 | 15.1 | 2.0 | 0.9 | 0.9 | 100.0 |

### Tuberculosis (All Forms)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1926—Male | 6,018 | 756 | 1,529 | 674 | 660 | 2,399 | 46,924 |
| Female | 8,244 | 611 | 1,378 | 581 | 1,101 | 4,573 | 41,816 |
| *Total* | 14,262 | 1,367 | 2,907 | 1,255 | 1,761 | 6,972 | 88,740 |
| *Per cent of total* | 16.1 | 1.5 | 3.3 | 1.4 | 2.0 | 7.9 | 100.0 |
| 1927—Male | 5,516 | 632 | 1,332 | 602 | 667 | 2,283 | 45,000 |
| Female | 7,914 | 587 | 1,239 | 569 | 1,054 | 4,465 | 40,194 |
| *Total* | 13,430 | 1,219 | 2,571 | 1,171 | 1,721 | 6,748 | 85,194 |
| *Per cent of total* | 15.7 | 1.4 | 3.0 | 1.4 | 2.0 | 7.9 | 100.0 |
| 1928—Male | 5,760 | 665 | 1,314 | 631 | 693 | 2,457 | 47,468 |
| Female | 8,013 | 562 | 1,300 | 605 | 1,052 | 4,494 | 41,539 |
| *Total* | 13,773 | 1,227 | 2,614 | 1,236 | 1,745 | 6,951 | 89,007 |
| *Per cent of total* | 15.5 | 1.4 | 2.9 | 1.4 | 2.0 | 7.8 | 100.0 |

### Lobar Pneumonia

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1926—Male | 7,133 | 2,928 | 2,344 | 572 | 402 | 887 | 32,354 |
| Female | 5,408 | 2,134 | 1,893 | 434 | 387 | 560 | 23,138 |
| *Total* | 12,541 | 5,062 | 4,237 | 1,006 | 789 | 1,447 | 55,492 |
| *Per cent of total* | 22.3 | 9.0 | 7.5 | 1.8 | 1.4 | 2.6 | 100.0 |
| 1927—Male | 5,555 | 2,271 | 1,619 | 544 | 361 | 760 | 27,353 |
| Female | 4,398 | 1,744 | 1,394 | 415 | 330 | 515 | 18,460 |
| *Total* | 9,953 | 4,015 | 3,013 | 959 | 691 | 1,275 | 45,813 |
| *Per cent of total* | 21.8 | 8.8 | 6.6 | 2.1 | 1.5 | 2.8 | 100.0 |
| 1928—Male | 7,423 | 2,777 | 2,250 | 680 | 539 | 1,177 | 35,924 |
| Female | 5,704 | 2,090 | 1,817 | 550 | 528 | 719 | 24,482 |
| *Total* | 13,127 | 4,867 | 4,067 | 1,230 | 1,067 | 1,896 | 60,406 |
| *Per cent of total* | 21.6 | 8.0 | 6.7 | 2.0 | 1.8 | 3.1 | 100.0 |

### DIPHTHERIA

| *Year* | *Deaths Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1926—Male............ | 3,817 | 321 | 2,166 | 1,032 | 244 | 54 | 3,995 |
| Female.......... | 3,416 | 245 | 1,785 | 1,065 | 248 | 73 | 3,699 |
| *Total*................ | 7,233 | 566 | 3,951 | 2,097 | 492 | 127 | 7,694 |
| *Per cent of total*....... | 94.3 | 7.4 | 51.4 | 27.3 | 6.5 | 1.7 | 100.0 |
| 1927—Male............ | 4,061 | 276 | 2,246 | 1,207 | 269 | 63 | 4,227 |
| Female.......... | 3,711 | 230 | 1,935 | 1,191 | 291 | 64 | 4,008 |
| *Total*................ | 7,772 | 506 | 4,181 | 2,398 | 560 | 127 | 8.235 |
| *Per cent of total*....... | 94.5 | 6.2 | 50.8 | 29.2 | 6.8 | 1.5 | 100.0 |
| 1928—Male............ | 3,952 | 319 | 2,255 | 1,115 | 205 | 58 | 4,117 |
| Female.......... | 3,724 | 281 | 2,013 | 1,144 | 227 | 59 | 4,032 |
| *Total*................ | 7,676 | 600 | 4,268 | 2,259 | 432 | 117 | 8,149 |
| *Per cent of total*....... | 94.2 | 7.4 | 52.4 | 27.7 | 5.3 | 1.4 | 100.0 |
| **WHOOPING COUGH** | | | | | | | |
| 1926—Male............ | 4,167 | 2,438 | 1,597 | 113 | 14 | 5 | 4,215 |
| Female.......... | 4,895 | 2,589 | 2,122 | 162 | 18 | 4 | 4,913 |
| *Total*................ | 9,062 | 5,027 | 3,719 | 275 | 32 | 9 | 9,128 |
| *Per cent of total*....... | 99.2 | 55.1 | 40.7 | 3.0 | 0.3 | 0.1 | 100.0 |
| 1927—Male............ | 3,479 | 2,186 | 1,165 | 106 | 17 | 5 | 3,490 |
| Female.......... | 3,809 | 2,171 | 1,480 | 132 | 19 | 7 | 3,832 |
| *Total*................ | 7,288 | 4,357 | 2,645 | 238 | 36 | 12 | 7,322 |
| *Per cent of total*....... | 99.7 | 59.5 | 36.2 | 3.3 | 0.5 | 0.2 | 100.0 |
| 1928—Male............ | 2,275 | 1,679 | 997 | 83 | 12 | 4 | 2,779 |
| Female.......... | 3,351 | 1,821 | 1,401 | 113 | 10 | 6 | 3,361 |
| *Total*................ | 5,626 | 3,500 | 2,398 | 196 | 22 | 10 | 6,140 |
| *Per cent of total*....... | 99.9 | 57.0 | 39.1 | 3.2 | 0.4 | 0.2 | 100.0 |
| **INFLUENZA (With Pulmonary Complications)** | | | | | | | |
| 1926—Male............ | 4,573 | 2,151 | 1,555 | 276 | 185 | 406 | 13,648 |
| Female.......... | 3,523 | 1,530 | 1,247 | 270 | 168 | 308 | 12,856 |
| *Total* ............... | 8,096 | 3,681 | 2,802 | 546 | 353 | 714 | 26,504 |
| *Per cent of total*....... | 30.6 | 13.9 | 10.6 | 2.1 | 1.3 | 2.7 | 100.0 |
| 1927—Male............ | 2,339 | 1,169 | 685 | 159 | 102 | 224 | 7,344 |
| Female.......... | 1,962 | 860 | 653 | 168 | 102 | 179 | 6,680 |
| *Total*................ | 4,301 | 2,029 | 1,338 | 327 | 204 | 403 | 14,024 |
| *Per cent of total*....... | 30.7 | 14.5 | 9.5 | 2.3 | 1.5 | 2.9 | 100.0 |
| 1928—Male............ | 5,242 | 2,272 | 1,697 | 443 | 232 | 598 | 16,767 |
| Female.......... | 4,198 | 1,634 | 1,388 | 365 | 325 | 486 | 15,888 |
| *Total*................ | 9,440 | 3,906 | 3,085 | 808 | 557 | 1,084 | 32,655 |
| *Per cent of total*....... | 28.9 | 12.0 | 9.4 | 2.5 | 1.7 | 3.3 | 100.0 |
| **MEASLES** | | | | | | | |
| 1926—Male............ | 4,291 | 1,186 | 2,465 | 459 | 94 | 87 | 4,486 |
| Female.......... | 3,754 | 983 | 2,112 | 446 | 123 | 90 | 4,093 |
| *Total*................ | 8,045 | 2,169 | 4,577 | 905 | 217 | 177 | 8,579 |
| *Per cent of total*....... | 93.9 | 25.3 | 53.4 | 10.6 | 2.5 | 2.1 | 100.0 |
| 1927—Male............ | 2,120 | 561 | 1,125 | 280 | 84 | 70 | 2,242 |
| Female.......... | 1,882 | 453 | 1,033 | 240 | 78 | 78 | 2,103 |
| *Total*................ | 4,002 | 1,014 | 2,158 | 520 | 162 | 148 | 4,345 |
| *Per cent of total*....... | 92.9 | 23.4 | 49.7 | 12.7 | 3.7 | 3.4 | 100.0 |
| 1928—Male............ | 2,793 | 848 | 1,427 | 322 | 94 | 102 | 2,596 |
| Female.......... | 2,521 | 585 | 1,387 | 346 | 116 | 87 | 2,892 |
| *Total*................ | 5,314 | 1,435 | 2,814 | 668 | 210 | 189 | 5,488 |
| *Per cent of total*....... | 96.7 | 26.1 | 51.3 | 12.1 | 3.8 | 3.4 | 100.0 |

### INFLUENZA (Other, and Unspecified)

| *Year* | *Deaths Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1926—Male | 2,377 | 1,089 | 682 | 216 | 173 | 217 | 7,311 |
| Female | 1,949 | 840 | 562 | 211 | 146 | 190 | 7,712 |
| *Total* | 4,326 | 1,929 | 1,244 | 427 | 319 | 407 | 15,023 |
| *Per cent of total* | 28.5 | 12.8 | 8.1 | 2.8 | 2.1 | 2.7 | 100.0 |
| 1927—Male | 1,595 | 728 | 455 | 164 | 104 | 144 | 4,914 |
| Female | 1,345 | 524 | 375 | 169 | 131 | 146 | 4,894 |
| *Total* | 2,940 | 1,252 | 830 | 333 | 235 | 290 | 9,808 |
| *Per cent of total* | 29.9 | 12.8 | 8.3 | 3.4 | 2.4 | 3.0 | 100.0 |
| 1928—Male | 2,822 | 1,277 | 759 | 305 | 195 | 286 | 8,925 |
| Female | 2,403 | 996 | 687 | 288 | 200 | 232 | 9,364 |
| *Total* | 5,225 | 2,273 | 1,446 | 593 | 395 | 518 | 18,289 |
| *Per cent of total* | 28.5 | 12.4 | 7.9 | 3.2 | 2.2 | 2.8 | 100.00 |
| **TYPHOID FEVER AND PARATYPHOID** | | | | | | | |
| 1926—Male | 1,322 | 24 | 120 | 216 | 316 | 646 | 3,664 |
| Female | 1,307 | 14 | 127 | 241 | 378 | 547 | 2,934 |
| *Total* | 2,629 | 38 | 247 | 457 | 694 | 1,193 | 6,598 |
| *Per cent of total* | 39.9 | 0.5 | 3.7 | 7.0 | 10.6 | 18.1 | 100.0 |
| 1927—Male | 1,141 | 24 | 146 | 199 | 270 | 502 | 3,252 |
| Female | 1,083 | 15 | 109 | 189 | 323 | 447 | 2,441 |
| *Total* | 2,224 | 39 | 255 | 388 | 593 | 949 | 5,693 |
| *Per cent of total* | 39 | 0.7 | 4.5 | 6.7 | 10.4 | 16.7 | 100.0 |
| 1928—Male | 1,127 | 22 | 108 | 199 | 285 | 513 | 3,159 |
| Female | 1,058 | 18 | 126 | 211 | 297 | 406 | 2,383 |
| *Total* | 2,185 | 40 | 234 | 410 | 582 | 919 | 5,542 |
| *Per cent of total* | 39.4 | 0.7 | 4.2 | 7.4 | 10.5 | 16.6 | 100.0 |
| **PNEUMONIA (Unspecified)** | | | | | | | |
| 1926—Male | 1,323 | 753 | 358 | 81 | 51 | 80 | 2,631 |
| Female | 1,008 | 585 | 272 | 49 | 44 | 58 | 2,132 |
| *Total* | 2,331 | 1,338 | 630 | 130 | 95 | 138 | 4,763 |
| *Per cent of total* | 48.9 | 28.1 | 13.2 | 2.7 | 2.0 | 2.9 | 100.0 |
| 1927—Male | 1,103 | 632 | 283 | 65 | 42 | 81 | 2,131 |
| Female | 862 | 504 | 217 | 59 | 35 | 47 | 1,712 |
| *Total* | 1,965 | 1,136 | 500 | 124 | 77 | 128 | 3,843 |
| *Per cent of total* | 51.2 | 29.6 | 13.1 | 3.2 | 2.0 | 3.3 | 100.0 |
| 1928—Male | 1,436 | 801 | 372 | 104 | 61 | 98 | 3,135 |
| Female | 1,234 | 637 | 338 | 88 | 59 | 112 | 2,653 |
| *Total* | 2,670 | 1,438 | 710 | 192 | 120 | 210 | 5,788 |
| *Per cent of total* | 46.1 | 24.8 | 12.3 | 3.3 | 2.1 | 3.6 | 100.0 |
| **SYPHILIS** | | | | | | | |
| 1926—Male | 1,180 | 939 | 128 | 30 | 28 | 64 | 5,675 |
| Female | 923 | 687 | 93 | 21 | 33 | 89 | 2,840 |
| *Total* | 2,112 | 1,626 | 221 | 51 | 61 | 153 | 8,515 |
| *Per cent of total* | 24.8 | 19.1 | 2.6 | 0.6 | 0.7 | 1.8 | 100.0 |
| 1927—Male | 1,197 | 965 | 111 | 30 | 29 | 62 | 5,743 |
| Female | 943 | 714 | 85 | 22 | 33 | 89 | 2,963 |
| *Total* | 2,140 | 1,679 | 196 | 52 | 62 | 151 | 8,706 |
| *Per cent of total* | 24.6 | 19.3 | 2.2 | 0.6 | 0.8 | 1.7 | 100.0 |
| 1928—Male | 1,259 | 999 | 119 | 36 | 37 | 68 | 6,449 |
| Female | 1,101 | 794 | 107 | 32 | 38 | 130 | 3,367 |
| *Total* | 2,360 | 1,793 | 226 | 68 | 75 | 198 | 9,816 |
| *Per cent of total* | 24.1 | 18.3 | 2.3 | 0.7 | 0.8 | 2.0 | 100.0 |

### SCARLET FEVER

| *Year* | *Deaths Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1926—Male | 1,175 | 66 | 581 | 359 | 107 | 62 | 1,316 |
| Female | 1,088 | 54 | 458 | 368 | 131 | 77 | 1,322 |
| *Total* | 2,263 | 120 | 1,039 | 727 | 238 | 139 | 2,638 |
| *Per cent of total* | 85.8 | 4.5 | 39.4 | 27.6 | 9.0 | 5.3 | 100.0 |
| 1927—Male | 1,085 | 70 | 503 | 354 | 97 | 61 | 1,220 |
| Female | 974 | 41 | 424 | 302 | 128 | 79 | 1,191 |
| *Total* | 2,059 | 111 | 927 | 656 | 225 | 140 | 2,411 |
| *Per cent of total* | 85.4 | 4.6 | 38.5 | 27.2 | 9.3 | 5.8 | 100.0 |
| 1928—Male | 945 | 61 | 442 | 296 | 98 | 48 | 1,073 |
| Female | 934 | 54 | 405 | 304 | 107 | 64 | 1,133 |
| *Total* | 1,879 | 115 | 847 | 600 | 205 | 112 | 2,206 |
| *Per cent of total* | 85.2 | 5.2 | 38.4 | 27.2 | 9.3 | 5.1 | 100.0 |
| DYSENTERY | | | | | | | |
| 1926—Male | 221 | 20 | 84 | 34 | 29 | 54 | 732 |
| Female | 204 | 16 | 67 | 36 | 40 | 45 | 740 |
| *Total* | 425 | 36 | 151 | 70 | 69 | 99 | 1,472 |
| *Per cent of total* | 28.9 | 2.4 | 10.3 | 4.8 | 4.7 | 6.7 | 100.0 |
| 1927—Male | 147 | 13 | 44 | 22 | 30 | 38 | 678 |
| Female | 148 | 13 | 58 | 14 | 23 | 40 | 617 |
| *Total* | 295 | 26 | 102 | 36 | 53 | 78 | 1,295 |
| *Per cent of total* | 22.8 | 2.0 | 7.9 | 2.8 | 4.1 | 6.0 | 100.0 |
| 1928—Male | 195 | 18 | 57 | 50 | 23 | 47 | 700 |
| Female | 197 | 25 | 64 | 47 | 22 | 39 | 652 |
| *Total* | 392 | 43 | 121 | 97 | 45 | 86 | 1,352 |
| *Per cent of total* | 29.0 | 3.2 | 8.9 | 7.2 | 3.3 | 6.4 | 100.0 |
| MENINGOCOCCUS MENINGITIS | | | | | | | |
| 1926 Male | 621 | 159 | 194 | 97 | 69 | 102 | 859 |
| Female | 404 | 108 | 148 | 74 | 47 | 27 | 526 |
| *Total* | 1,025 | 267 | 342 | 171 | 116 | 129 | 1,385 |
| *Per cent of total* | 74.0 | 19.3 | 24.7 | 12.3 | 8.4 | 9.3 | 100.0 |
| 1927 Male | 744 | 179 | 214 | 136 | 83 | 132 | 1,055 |
| Female | 448 | 117 | 146 | 82 | 68 | 35 | 614 |
| *Total* | 1,192 | 296 | 360 | 218 | 151 | 167 | 1,669 |
| *Per cent of total* | 71.6 | 17.8 | 21.6 | 13.1 | 9.1 | 10.0 | 100.0 |
| 1928 Male | 1,261 | 240 | 349 | 235 | 198 | 239 | 1,881 |
| Female | 781 | 145 | 239 | 176 | 119 | 102 | 1,020 |
| *Total* | 2,042 | 385 | 588 | 411 | 317 | 341 | 2,901 |
| *Per cent of total* | 70.5 | 13.3 | 20.3 | 14.2 | 10.9 | 11.8 | 100.0 |
| MALARIA | | | | | | | |
| 1926 Male | 430 | 107 | 144 | 81 | 39 | 59 | 960 |
| Female | 412 | 90 | 127 | 71 | 55 | 69 | 965 |
| *Total* | 842 | 197 | 271 | 152 | 94 | 128 | 1,925 |
| *Per cent of total* | 43.7 | 10.2 | 14.1 | 7.9 | 4.9 | 6.6 | 100.0 |
| 1927 Male | 650 | 161 | 204 | 137 | 76 | 72 | 1,423 |
| Female | 584 | 116 | 203 | 83 | 85 | 97 | 1,396 |
| *Total* | 1,234 | 277 | 407 | 220 | 161 | 169 | 2,819 |
| *Per cent of total* | 43.7 | 9.8 | 14.4 | 7.8 | 5.7 | 6.0 | 100.0 |
| 1928 Male | 882 | 160 | 288 | 223 | 103 | 108 | 2,063 |
| Female | 915 | 161 | 286 | 209 | 124 | 135 | 2,074 |
| *Total* | 1,797 | 321 | 574 | 432 | 227 | 243 | 4,137 |
| *Per cent of total* | 44.0 | 7.8 | 13.9 | 10.9 | 5.5 | 5.9 | 100.0 |

| *Year* | | *Deaths Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|---|
| | ACUTE ANTERIOR POLIOMYELITIS | | | | | | | |
| 1926 | Male | 404 | 51 | 163 | 86 | 57 | 47 | 466 |
| | Female | 319 | 43 | 129 | 67 | 52 | 28 | 357 |
| *Total* | | 723 | 94 | 292 | 153 | 109 | 75 | 823 |
| *Per cent of total* | | 87.3 | 11.4 | 35.4 | 18.2 | 13.2 | 9.1 | 100.0 |
| 1927 | Male | 973 | 87 | 334 | 274 | 183 | 95 | 1,107 |
| | Female | 753 | 68 | 273 | 209 | 139 | 64 | 862 |
| *Total* | | 1,726 | 155 | 607 | 483 | 322 | 159 | 1,969 |
| *Per cent of total* | | 88.1 | 7.9 | 30.9 | 24.5 | 16.7 | 8.1 | 100.0 |
| 1928 | Male | 674 | 76 | 222 | 171 | 127 | 78 | 769 |
| | Female | 528 | 56 | 198 | 144 | 80 | 50 | 593 |
| *Total* | | 1,202 | 132 | 420 | 315 | 207 | 128 | 1,362 |
| *Per cent of total* | | 88.2 | 9.7 | 30.8 | 23.1 | 15.2 | 9.4 | 100.0 |
| | TETANUS | | | | | | | |
| 1926 | Male | 625 | 121 | 56 | 163 | 201 | 84 | 954 |
| | Female | 226 | 100 | 34 | 49 | 31 | 12 | 350 |
| *Total* | | 851 | 221 | 90 | 212 | 232 | 96 | 1,304 |
| *Per cent of total* | | 65.0 | 16.9 | 6.9 | 16.1 | 17.7 | 7.4 | 100.0 |
| 1927 | Male | 691 | 142 | 49 | 167 | 234 | 99 | 1,016 |
| | Female | 215 | 82 | 34 | 59 | 27 | 13 | 336 |
| *Total* | | 906 | 224 | 83 | 226 | 261 | 112 | 1,352 |
| *Per cent of total* | | 67.2 | 16.6 | 6.1 | 16.7 | 19.5 | 8.3 | 100.0 |
| 1928 | Male | 670 | 140 | 63 | 191 | 198 | 78 | 1,057 |
| | Female | 249 | 92 | 34 | 76 | 33 | 14 | 390 |
| *Total* | | 919 | 232 | 97 | 267 | 231 | 92 | 1,447 |
| *Per cent of total* | | 63.6 | 16.0 | 6.7 | 18.5 | 16.0 | 6.4 | 100.0 |
| | EPIDEMIC ENCEPHALITIS | | | | | | | |
| 1926 | Male | 221 | 20 | 84 | 34 | 29 | 54 | 732 |
| | Female | 204 | 16 | 67 | 36 | 40 | 45 | 740 |
| *Total* | | 425 | 36 | 151 | 70 | 69 | 99 | 1,472 |
| *Per cent of total* | | 28.9 | 2.4 | 10.3 | 4.8 | 4.7 | 6.7 | 100.0 |
| 1927 | Male | 147 | 13 | 44 | 22 | 30 | 38 | 678 |
| | Female | 148 | 13 | 58 | 14 | 23 | 40 | 617 |
| *Total* | | 295 | 26 | 102 | 36 | 53 | 78 | 1,295 |
| *Per cent of total* | | 22.7 | 2.0 | 7.9 | 2.7 | 4.1 | 6.0 | 100.0 |
| 1928 | Male | 195 | 18 | 57 | 50 | 23 | 47 | 700 |
| | Female | 197 | 25 | 64 | 47 | 22 | 39 | 652 |
| *Total* | | 392 | 43 | 121 | 97 | 45 | 86 | 1,352 |
| *Per cent of total* | | 29.0 | 3.2 | 8.9 | 7.2 | 3.3 | 6.4 | 100.0 |
| | GONORRHEAL INFECTION | | | | | | | |
| 1926 | Male | 26 | 20 | 2 | 0 | 1 | 3 | 167 |
| | Female | 104 | 19 | 4 | 0 | 6 | 75 | 826 |
| *Total* | | 130 | 39 | 6 | 0 | 7 | 78 | 993 |
| *Per cent of total* | | 13.1 | 3.9 | 0.6 | 0.0 | 0.7 | 7.9 | 100.0 |
| 1927 | Male | 29 | 19 | 3 | 0 | 0 | 7 | 148 |
| | Female | 127 | 15 | 4 | 0 | 8 | 100 | 831 |
| *Total* | | 156 | 34 | 7 | 0 | 8 | 107 | 979 |
| *Per cent of total* | | 16.0 | 3.5 | 0.7 | 0.0 | 0.8 | 11.0 | 100.0 |
| 1928 | Male | 25 | 18 | 1 | 1 | 0 | 5 | 166 |
| | Female | 142 | 23 | 2 | 2 | 6 | 109 | 827 |
| *Total* | | 167 | 41 | 3 | 3 | 6 | 114 | 993 |
| *Per cent of total* | | 16.8 | 4.1 | 0.3 | 0.3 | 0.6 | 11.5 | 100.0 |

## MUMPS

| *Year* | | *Deaths Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|---|
| 1926 | Male | 39 | 10 | 13 | 8 | 3 | 5 | 53 |
| | Female | 28 | 6 | 11 | 7 | 3 | 1 | 49 |
| | *Total* | 67 | 16 | 24 | 15 | 6 | 6 | 102 |
| | *Per cent of total* | 65.7 | 15.7 | 23.5 | 14.7 | 5.9 | 5.9 | 100.0 |
| 1927 | Male | 45 | 9 | 16 | 9 | 9 | 2 | 58 |
| | Female | 34 | 11 | 12 | 7 | 2 | 2 | 60 |
| | *Total* | 79 | 20 | 28 | 16 | 11 | 4 | 118 |
| | *Per cent of total* | 66.9 | 17.0 | 23.7 | 13.5 | 9.3 | 3.4 | 100.0 |
| 1928 | Male | 34 | 10 | 13 | 5 | 2 | 4 | 60 |
| | Female | 25 | 7 | 9 | 5 | 2 | 2 | 55 |
| | *Total* | 59 | 17 | 22 | 10 | 4 | 6 | 115 |
| | *Per cent of total* | 51.3 | 14.8 | 19.1 | 8.7 | 3.5 | 5.2 | 100.0 |

## SMALLPOX

| *Year* | | *Deaths Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|---|
| 1926 | Male | 57 | 16 | 16 | 9 | 6 | 10 | 238 |
| | Female | 35 | 11 | 6 | 4 | 2 | 12 | 138 |
| | *Total* | 92 | 27 | 22 | 13 | 8 | 22 | 376 |
| | *Per cent of total* | 24.5 | 7.2 | 5.9 | 3.5 | 2.1 | 5.9 | 100.0 |
| 1927 | Male | 31 | 16 | 2 | 3 | 4 | 6 | 82 |
| | Female | 24 | 7 | 6 | 3 | 4 | 4 | 56 |
| | *Total* | 55 | 23 | 8 | 6 | 8 | 10 | 138 |
| | *Per cent of total* | 39.8 | 16.6 | 5.8 | 4.4 | 5.8 | 7.2 | 100.0 |
| 1928 | Male | 31 | 17 | 8 | 2 | 2 | 2 | 78 |
| | Female | 23 | 10 | 3 | 6 | 1 | 3 | 51 |
| | *Total* | 54 | 27 | 11 | 8 | 3 | 5 | 129 |
| | *Per cent of total* | 41.8 | 20.9 | 8.5 | 6.2 | 2.3 | 3.9 | 100.0 |

## RABIES

| *Year* | | *Deaths Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|---|
| 1926 | Male | 34 | 0 | 8 | 10 | 14 | 2 | 56 |
| | Female | 18 | 0 | 4 | 8 | 4 | 2 | 26 |
| | *Total* | 52 | 0 | 12 | 18 | 18 | 4 | 82 |
| | *Per cent of total* | 63.6 | 0.0 | 14.7 | 22.0 | 22.0 | 4.9 | 100.0 |
| 1927 | Male | 38 | 0 | 10 | 16 | 9 | 3 | 66 |
| | Female | 16 | 0 | 5 | 4 | 3 | 4 | 24 |
| | *Total* | 54 | 0 | 15 | 20 | 12 | 7 | 90 |
| | *Per cent of total* | 60.5 | 0.0 | 16.7 | 22.3 | 13.7 | 7.8 | 100.0 |
| 1928 | Male | 51 | 0 | 15 | 15 | 20 | 1 | 76 |
| | Female | 18 | 0 | 5 | 5 | 6 | 2 | 27 |
| | *Total* | 69 | 0 | 20 | 20 | 26 | 3 | 103 |
| | *Per cent of total* | 67.0 | 0.0 | 19.4 | 19.4 | 25.3 | 2.9 | 100.0 |

# CASES BY AGE GROUPS

## REPORTED IN KANSAS, MASSACHUSETTS AND NEW YORK

DATA were obtained from three States in regard to the age groups to which reported cases of common communicable diseases belonged, for periods of five or ten years. The data are given in the tables which follow. They indicate that if Massachusetts figures are taken for a ten year period the order of greatest prevalence so far as persons under twenty years are concerned would be: measles, scarlet fever, whooping cough, diphtheria, mumps, lobar pneumonia, German measles, gonorrhea, tuberculosis, poliomyelitis, typhoid fever, syphilis, meningococcus meningitis, and epidemic encephalitis, which differs considerably from the order for the greatest number of deaths as shown for the registration area. The same general remark which was made in regard to mortality may be made for morbidity; viz., that a fairly constant percentage of the total cases of each year occurs in the different age groups. The percentages in the age groups vary for each of the three States but not to any marked degree.

Differences, however, are quite marked for a number of diseases when the case percentage for an age group is compared with the mortality percentage. For example, for diphtheria 7 per cent of deaths were under one year, but in that age group there were less than 2 per cent of the cases; 58.5 per cent of the deaths were under five years but only about 25 per cent of the cases were in that group, indicating how much more fatal the disease is in the lower age groups. Scarlet fever had almost an equal percentage of both deaths and cases in the under twenty year group, but its percentage of death in the under five group was more than double the proportionate percentage of cases in the same group. The same proportionate higher fatality in the younger age groups is illustrated in whooping cough. About 49 per cent of cases were under five years but almost 96 per cent of all deaths due to whooping cough belonged to that age group.

The striking difference in morbidity and mortality by age groups is also indicated for the State of New York in diphtheria, typhoid fever, scarlet fever, whooping cough, and measles by comparing the fatality rate (or deaths per one hundred cases) given at the foot of the tables with the percentage distribution of cases.

This all illustrates the advisability, wherever possible, of wholly preventing those diseases which are particularly prevalent among children, but especially where absolute prevention is not attainable, the desirability of putting forth a well-planned effort to postpone the attack.

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### CASES OF MEASLES REPORTED BY AGE GROUPS

#### MASSACHUSETTS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | *1–4 Years* | *5–9 Years* | *10–14 Years* | *15–19 Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1920 | 28,602 | 770 | 9,613 | 15,120 | 2,403 | 696 | 32,141 |
| 1921 | 16,300 | 527 | 5,443 | 8,423 | 1,494 | 413 | 17,827 |
| 1922 | 21,403 | 644 | 7,490 | 11,647 | 1,320 | 302 | 23,291 |
| 1923 | 24,643 | 639 | 8,648 | 12,924 | 1,958 | 474 | 26,854 |
| 1924 | 19,881 | 601 | 6,605 | 10,528 | 1,601 | 546 | 22,425 |
| 1925 | 26,113 | 801 | 8,830 | 14,121 | 1,760 | 601 | 28,816 |
| 1926 | 26,537 | 687 | 8,934 | 13,900 | 2,302 | 714 | 30,020 |
| 1927 | 11,906 | 341 | 4,176 | 6,464 | 737 | 188 | 13,498 |
| 1928 | 37,486 | 944 | 11,157 | 22,592 | 2,246 | 547 | 41,519 |
| 1929 | 13,803 | 396 | 4,198 | 7,813 | 1,161 | 235 | 14,925 |
| *Total* | 226,674 | 6,350 | 75,094 | 123,532 | 16,982 | 4,716 | 251,316 |
| *Per cent of total* | 90.0 | 2.5 | 30.0 | 49.0 | 6.7 | 1.8 | 100.0 |

#### NEW YORK

Exclusive of Places Over 200,000 Population and State and Children's Institutions

| *Year* | *Total Under 20 Years* | *Under 1 Year* | *1–4 Years* | *5–9 Years* | *10–14 Years* | *15–19 Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Average number cases: | | | | | | | |
| 1924–28 | 28,800 | 728 | 8,028 | 14,521 | 4,045 | 1,477 | 30,412 |
| 1929 | 24,140 | 528 | 6,431 | 12,672 | 3,303 | 1,206 | 25,417 |
| Average per cent of totals: | | | | | | | |
| 1924–29 | 94.9 | 2.4 | 26.2 | 48.1 | 13.3 | 4.9 | 100.0 |
| Average fatality rate: | | | | | | | |
| 1924–28 | 0.5 | 5.8 | 1.0 | 0.1 | 0.06 | 0.2 | 0.5 |

## Cases of Scarlet Fever Reported by Age Groups

### KANSAS

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1928 | 4,773 | 64 | 1,022 | 2,057 | 1,145 | 485 | 5,497 |
| 1929 | 4,136 | 51 | 718 | 1,785 | 1,078 | 504 | 4,869 |
| *Total* | 8,909 | 115 | 1,740 | 3,842 | 2,223 | 989 | 10,366 |
| *Per cent of total* | 86.0 | 1.1 | 16.8 | 37.1 | 21.5 | 9.5 | 100.0 |
|  |  |  |  |  |  | Males, | 4,444 |
|  |  |  |  |  |  | Females, | 5,922 |

### MASSACHUSETTS

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1920 | 8,737 | 85 | 2,306 | 3,940 | 1,807 | 599 | 10,260 |
| 1921 | 7,340 | 58 | 2,005 | 3,397 | 1,424 | 456 | 8,331 |
| 1922 | 6,827 | 63 | 1,715 | 3,160 | 1,395 | 494 | 7,868 |
| 1923 | 10,644 | 61 | 2,580 | 4,952 | 2,252 | 799 | 12,300 |
| 1924 | 12,210 | 104 | 3,011 | 5,734 | 2,577 | 784 | 14,410 |
| 1925 | 8,737 | 64 | 2,222 | 4,070 | 1,675 | 706 | 10,319 |
| 1926 | 9,389 | 86 | 2,357 | 4,701 | 1,587 | 658 | 11,323 |
| 1927 | 14,014 | 89 | 3,487 | 6,920 | 2,666 | 852 | 16,546 |
| 1928 | 8,776 | 45 | 2,213 | 4,259 | 1,703 | 556 | 10,473 |
| 1929 | 8,565 | 44 | 2,199 | 4,161 | 1,623 | 538 | 9,975 |
| *Total* | 95,239 | 699 | 24,095 | 45,294 | 18,709 | 6,442 | 111,805 |
| *Per cent of total* | 85.2 | 0.6 | 21.4 | 40.7 | 16.7 | 5.8 | 100.0 |

### NEW YORK

Exclusive of Cities Over 200,000 Population and State Institutions

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Average number cases: |  |  |  |  |  |  |  |
| 1924–28 | 7,877 | 56 | 1,544 | 3,500 | 2,001 | 776 | 9,151 |
| 1929 | 5,991 | 41 | 1,121 | 2,891 | 1,420 | 518 | 6,901 |
| Average per cent of totals: |  |  |  |  |  |  |  |
| 1924–29 | 86.3 | 0.6 | 16.9 | 38.8 | 21.7 | 8.3 | 100.0 |
| Average fatality rate: |  |  |  |  |  |  |  |
| 1924–28 | 1.0 | 7.1 | 2.3 | 0.6 | 0.4 | 0.9 | 1.0 |

## Cases of Whooping Cough Reported by Age Groups

### MASSACHUSETTS

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1920 | 9,009 | 932 | 4,069 | 3,601 | 346 | 61 | 9,994 |
| 1921 | 5,307 | 534 | 2,351 | 2,129 | 263 | 30 | 5,703 |
| 1922 | 6,428 | 622 | 2,898 | 2,703 | 181 | 24 | 6,823 |
| 1923 | 9,752 | 759 | 4,185 | 4,293 | 473 | 42 | 10,612 |
| 1924 | 3,626 | 380 | 1,628 | 1,458 | 148 | 12 | 4,062 |
| 1925 | 7,335 | 729 | 3,398 | 2,978 | 185 | 45 | 8,077 |
| 1926 | 10,338 | 955 | 4,758 | 4,255 | 329 | 41 | 11,547 |
| 1927 | 5,696 | 488 | 2,574 | 2,448 | 164 | 22 | 6,273 |
| 1928 | 7,106 | 600 | 3,022 | 3,231 | 221 | 32 | 8,023 |
| 1929 | 7,119 | 591 | 3,078 | 3,217 | 213 | 20 | 7,708 |
| *Total* | 71,716 | 6,590 | 31,961 | 30,313 | 2,523 | 329 | 78,822 |
| *Per cent of total* | 91.1 | 8.4 | 40.7 | 38.4 | 3.2 | 0.4 | 100.0 |

### NEW YORK

Exclusive of Places Over 200,000 Population and State Institutions

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Average number cases: |  |  |  |  |  |  |  |
| 1924–28 | 10,903 | 908 | 4,589 | 4,590 | 721 | 95 | 11,061 |
| 1929 | 11,599 | 852 | 4,734 | 5,200 | 730 | 83 | 11,745 |
| Average per cent of totals: |  |  |  |  |  |  |  |
| 1924–29 | 98.7 | 8.3 | 41.2 | 41.9 | 6.4 | 0.9 | 100.0 |
| Average fatality rate: |  |  |  |  |  |  |  |
| 1924–28 | 1.9 | 14.1 | 1.6 | 0.1 | 0.1 | 0.6 | 1.9 |

## Cases of Diphtheria Reported by Age Groups

### KANSAS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925 | 769 | 16 | 232 | 258 | 149 | 114 | 1,101 |
| 1926 | 689 | 12 | 208 | 262 | 125 | 82 | 903 |
| 1927 | 787 | 9 | 232 | 344 | 130 | 72 | 1,073 |
| 1928 | 604 | 6 | 175 | 237 | 119 | 67 | 793 |
| 1929 | 676 | 12 | 176 | 295 | 122 | 71 | 919 |
| *Total* | 3,525 | 55 | 1,023 | 1,396 | 645 | 406 | 4,789 |
| *Per cent of total* | 73.6 | 1.1 | 21.4 | 29.1 | 13.5 | 8.5 | 100.0 |
| | | | | | | Males, | 2,179 |
| | | | | | | Females, | 2,610 |

### MASSACHUSETTS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1920 | 5,932 | 134 | 1,882 | 2,601 | 954 | 361 | 7,513 |
| 1921 | 7,452 | 175 | 2,289 | 3,456 | 1,180 | 352 | 9,100 |
| 1922 | 7,388 | 206 | 2,437 | 3,271 | 1,123 | 351 | 8,826 |
| 1923 | 7,669 | 137 | 2,470 | 3,707 | 1,043 | 312 | 9,018 |
| 1924 | 5,825 | 157 | 2,124 | 2,374 | 894 | 276 | 7,290 |
| 1925 | 3,593 | 105 | 1,255 | 1,544 | 501 | 188 | 4,482 |
| 1926 | 2,652 | 54 | 1,005 | 1,157 | 304 | 132 | 3,401 |
| 1927 | 3,880 | 63 | 1,306 | 1,798 | 543 | 170 | 4,750 |
| 1928 | 3,262 | 54 | 1,079 | 1,514 | 478 | 137 | 4,052 |
| 1929 | 3,400 | 59 | 1,074 | 1,550 | 557 | 160 | 4,255 |
| *Total* | 51,053 | 1,144 | 16,921 | 22,972 | 7,577 | 2,439 | 62,687 |
| *Per cent of total* | 81.4 | 1.8 | 27.0 | 36.7 | 12.0 | 3.9 | 100.0 |

### NEW YORK

Exclusive of Places of Over 200,000 Population and State Institutions

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Average number cases: | | | | | | | |
| 1924–28 | 2,528 | 52 | 760 | 1,039 | 477 | 200 | 3,148 |
| 1929 | 1,129 | 31 | 331 | 474 | 199 | 94 | 1,423 |
| Average per cent of totals: | | | | | | | |
| 1924–29 | 82.1 | 1.8 | 25.9 | 33.1 | 15.0 | 6.3 | 100.0 |
| Average fatality rates: | | | | | | | |
| 1924–28 | 7.7 | 16.3 | 13.6 | 6.2 | 3.7 | 1.3 | 6.9 |

## Cases of Typhoid Fever Reported by Age Groups

### KANSAS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925 | 436 | 1 | 33 | 129 | 161 | 112 | 812 |
| 1926 | 301 | 1 | 32 | 87 | 91 | 90 | 583 |
| 1927 | 281 | 1 | 28 | 72 | 90 | 90 | 511 |
| 1928 | 212 | 2 | 16 | 61 | 77 | 56 | 381 |
| 1929 | 166 | 0 | 9 | 43 | 58 | 56 | 308 |
| *Total* | 1,396 | 5 | 118 | 392 | 477 | 404 | 2,595 |
| *Per cent of total* | 53.8 | 0.2 | 4.5 | 15.1 | 18.4 | 15.6 | 100.0 |
| | | | | | | Males, | 1,458 |
| | | | | | | Females, | 1,137 |

### MASSACHUSETTS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1920 | 403 | 0 | 47 | 113 | 139 | 104 | 935 |
| 1921 | 429 | 0 | 53 | 130 | 162 | 84 | 917 |
| 1922 | 300 | 4 | 14 | 74 | 104 | 104 | 693 |
| 1923 | 271 | 0 | 27 | 89 | 77 | 78 | 622 |
| 1924 | 214 | 1 | 17 | 64 | 75 | 57 | 566 |
| 1925 | 239 | 0 | 25 | 65 | 80 | 69 | 592 |
| 1926 | 247 | 0 | 19 | 68 | 83 | 77 | 547 |
| 1927 | 217 | 0 | 26 | 61 | 58 | 72 | 466 |
| 1928 | 133 | 2 | 11 | 36 | 36 | 48 | 310 |
| 1929 | 135 | 0 | 13 | 40 | 38 | 44 | 307 |
| *Total* | 2,588 | 7 | 252 | 740 | 852 | 737 | 5,955 |
| *Per cent of total* | 43.4 | 0.2 | 4.2 | 12.4 | 14.3 | 12.3 | 100.0 |

### NEW YORK

Exclusive of Places Over 200,000 Population and State Institutions

| *Year* | *Total Under 20 Years* | *Under 5 Years* | *5–9 Years* | *10–14 Years* | *15–19 Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|
| Average number cases: | | | | | | |
| 1924–28.............. | 497 | 49 | 141 | 155 | 152 | 1,136 |
| 1929................. | 250 | 25 | 75 | 76 | 74 | 570 |
| Average per cent of totals in age groups: | | | | | | |
| 1924–29.............. | 43.8 | 4.3 | 12.5 | 13.6 | 13.4 | 100.0 |
| Average fatality rate: | | | | | | |
| 1924–28.............. | 6.2 | 2.8 | 2.3 | 6.2 | 11.5 | 11.3 |

## Cases of Tuberculosis (All Forms) Reported by Age Groups

### KANSAS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | *1–4 Years* | *5–9 Years* | *10–14 Years* | *15–19 Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925.................... | 501 | 6 | 25 | 118 | 153 | 199 | 2,440 |
| 1926.................... | 400 | 5 | 17 | 90 | 108 | 180 | 2,163 |
| 1927.................... | 436 | 7 | 13 | 107 | 115 | 194 | 2,133 |
| 1928.................... | 370 | 8 | 19 | 75 | 103 | 165 | 1,859 |
| 1929.................... | 384 | 7 | 10 | 83 | 104 | 180 | 1,758 |
| *Total*................. | 2,091 | 33 | 84 | 473 | 583 | 918 | 10,353 |
| *Per cent of total*........ | 20.2 | 0.3 | 0.8 | 4.6 | 5.6 | 8.9 | 100.0 |
| | | | | | | Males, | 4,967 |
| | | | | | | Females, | 5,386 |

### MASSACHUSETTS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | *1–4 Years* | *5–9 Years* | *10–14 Years* | *15–19 Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925.................... | 1,481 | 72 | 258 | 305 | 343 | 503 | 6,210 |
| 1926.................... | 1,408 | 77 | 271 | 275 | 278 | 507 | 6,318 |
| 1927.................... | 1,235 | 60 | 239 | 228 | 230 | 478 | 5,856 |
| 1928.................... | 1,143 | 59 | 228 | 174 | 227 | 455 | 5,630 |
| 1929.................... | 971 | 42 | 151 | 178 | 182 | 418 | 5,187 |
| *Total*................. | 6,238 | 310 | 1,147 | 1,160 | 1,260 | 2,361 | 29,201 |
| *Per cent of total*........ | 21.4 | 1.1 | 3.8 | 3.9 | 4.3 | 8.3 | 100.0 |

### NEW YORK

Exclusive of New York City

| *Year* | *Total Under 20 Years* | *0–4 Years* | *5–9 Years* | *10–14 Years* | *15–19 Years* | *Total, All Ages** |
|---|---|---|---|---|---|---|
| 1925.................... | 1,755 | 251 | 274 | 355 | 875 | 10,112 |
| 1926.................... | 1,590 | 250 | 228 | 351 | 761 | 8,415 |
| 1927.................... | 1,705 | 262 | 353 | 353 | 737 | 8,411 |
| 1928.................... | 1,792 | 222 | 368 | 406 | 796 | 8,786 |
| 1929.................... | 1,643 | 187 | 349 | 374 | 733 | 8,431 |
| *Total*................. | 8,485 | 1,172 | 1,572 | 1,839 | 3,902 | 44,155 |
| *Per cent of total*........ | 19.2 | 2.6 | 3.6 | 4.2 | 8.8 | 100.0 |

* From 83 to 88 per cent of all cases each year were pulmonary.

## Cases of Poliomyelitis Reported by Age Groups

### KANSAS

| *Year* | *Total Under 20 Years* | *Under 1 Year* | *1–4 Years* | *5–9 Years* | *10–14 Years* | *15–19 Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1926.................... | 58 | 2 | 25 | 20 | 9 | 2 | 66 |
| 1927.................... | 175 | 14 | 60 | 46 | 32 | 23 | 196 |
| 1928.................... | 37 | 2 | 10 | 13 | 8 | 4 | 40 |
| 1929.................... | 24 | 2 | 11 | 6 | 3 | 2 | 26 |
| *Total*................. | 294 | 20 | 106 | 85 | 52 | 31 | 328 |
| *Per cent of total*........ | 89.6 | 6.1 | 32.3 | 25.9 | 15.8 | 9.5 | 100.0 |
| | | | | | | Males, | 187 |
| | | | | | | Females, | 140 |

### MASSACHUSETTS

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1920 | 613 | 34 | 313 | 165 | 67 | 34 | 696 |
| 1921 | 194 | 9 | 89 | 53 | 30 | 13 | 233 |
| 1922 | 197 | 14 | 89 | 52 | 27 | 15 | 217 |
| 1923 | 200 | 15 | 111 | 46 | 20 | 8 | 223 |
| 1924 | 245 | 10 | 116 | 65 | 39 | 15 | 277 |
| 1925 | 144 | 9 | 72 | 27 | 28 | 8 | 167 |
| 1926 | 215 | 6 | 101 | 70 | 23 | 15 | 245 |
| 1927 | 1,100 | 39 | 497 | 361 | 133 | 70 | 1,189 |
| 1928 | 397 | 15 | 145 | 137 | 70 | 30 | 434 |
| 1929 | 108 | 4 | 32 | 38 | 19 | 15 | 119 |
| *Total* | 3,413 | 155 | 1,565 | 1,014 | 456 | 223 | 3,800 |
| *Per cent of total* | 90.0 | 4.1 | 41.2 | 26.8 | 12.0 | 5.9 | 100.0 |

### NEW YORK

Exclusive of New York City and State Institutions

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Average number cases: | | | | | | | |
| 1924–28 | 397 | 20 | 193 | 150 | 90 | 44 | 548 |
| 1929 | 292 | 11 | 168 | 110 | 74 | 29 | 423 |
| Average per cent of totals: | | | | | | | |
| 1924–29 | 91.1 | 3.5 | 36.0 | 27.2 | 16.6 | 7.8 | 100.0 |

## Cases of Smallpox Reported by Age Groups

### KANSAS

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925 | 184 | 3 | 36 | 44 | 42 | 59 | 311 |
| 1926 | 279 | 8 | 45 | 70 | 72 | 102 | 535 |
| 1927 | 748 | 20 | 95 | 229 | 214 | 190 | 1,393 |
| 1928 | 1,226 | 31 | 167 | 371 | 354 | 303 | 2,550 |
| 1929 | 998 | 21 | 133 | 313 | 270 | 261 | 1,950 |
| *Total* | 3,453 | 83 | 476 | 1,027 | 952 | 915 | 6,739 |
| *Per cent of total* | 51.2 | 1.2 | 7.1 | 15.2 | 14.1 | 13.6 | 100.0 |
| | | | | | | Males, | 3,760 |
| | | | | | | Females | 2,979 |

### MASSACHUSETTS

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925 | 1 | 0 | 0 | 1 | 0 | 0 | 3 |
| 1926 | 1 | 0 | 1 | 0 | 0 | 0 | 4 |
| 1927 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| 1928 | 2 | 1 | 1 | 0 | 0 | 0 | 19 |
| 1929 | 168 | 3 | 14 | 32 | 59 | 60 | 273 |
| *Total* | 173 | 4 | 16 | 33 | 59 | 61 | 301 |
| *Per cent of total* | 57.5 | 1.3 | 5.3 | 11.0 | 19.6 | 20.3 | 100.0 |

### NEW YORK

Exclusive of New York City and State Institutions

| *Year* | *Total Under* 20 *Years* | *Under* 1 *Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Average number cases: | | | | | | | |
| 1924–28 | 168 | 6 | 22 | 47 | 55 | 38 | 318 |
| 1929 | 174 | 3 | 19 | 57 | 47 | 48 | 290 |
| Average per cent of totals: | | | | | | | |
| 1924–29 | 54.0 | 1.7 | 6.9 | 15.6 | 17.1 | 12.7 | 100.0 |

## Cases Reported by Age Groups

### MASSACHUSETTS

### Epidemic Meningitis

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925 | 79 | 18 | 31 | 10 | 12 | 8 | 112 |
| 1926 | 85 | 10 | 28 | 24 | 13 | 10 | 116 |
| 1927 | 55 | 16 | 17 | 10 | 7 | 5 | 75 |
| 1928 | 88 | 18 | 25 | 17 | 18 | 10 | 107 |
| 1929 | 129 | 12 | 44 | 38 | 14 | 21 | 167 |
| *Total* | 436 | 74 | 145 | 99 | 64 | 54 | 577 |
| *Per cent of total* | 75.6 | 12.8 | 25.1 | 17.2 | 11.1 | 9.4 | 100.0 |

### Epidemic Encephalitis

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| 1925 | 57 | 4 | 19 | 16 | 10 | 8 | 146 |
| 1926 | 34 | 3 | 11 | 5 | 9 | 6 | 105 |
| 1927 | 36 | 1 | 13 | 10 | 5 | 7 | 79 |
| 1928 | 23 | 1 | 6 | 7 | 1 | 8 | 74 |
| 1929 | 18 | 0 | 5 | 4 | 3 | 6 | 54 |
| *Total* | 168 | 9 | 54 | 42 | 28 | 35 | 458 |
| *Per cent of total* | 36.7 | 2.0 | 11.8 | 9.2 | 6.1 | 7.6 | 100.0 |

### German Measles

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Cases, 10 years, 1920–29 | 15,781 | 445 | 2,627 | 6,987 | 4,017 | 1,705 | 19,020 |
| *Per cent of total* | 83.0 | 2.3 | 13.8 | 36.9 | 21.0 | 9.0 | 100.0 |

### Mumps

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Cases, 10 years, 1920–29 | 50,168 | 262 | 6,714 | 28,427 | 11,072 | 3,693 | 61,413 |
| *Per cent of total* | 81.7 | 0.4 | 10.9 | 46.3 | 18.0 | 6.1 | 100.0 |

### Lobar Pneumonia

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Cases, 10 years, 1920–29 | 16,989 | 1,564 | 5,627 | 5,095 | 2,370 | 2,333 | 49,172 |
| *Per cent of total* | 34.5 | 3.2 | 11.3 | 10.3 | 4.8 | 4.7 | 100.0 |

## Cases Reported by Age Groups for Syphilis and Gonorrhea

### MASSACHUSETTS

### Ten years, 1920–29

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Syphilis cases | 2,314 | 244 | 108 | 144 | 190 | 1,628 | 20,450 |
| *Per cent of total* | 11.3 | 1.2 | 0.5 | 0.7 | 0.9 | 8.0 | 100.0 |
| Gonorrhea cases | 6,801 | 72 | 240 | 419 | 355 | 5,715 | 51,209 |
| *Per cent of total* | 13.3 | 0.1 | 0.5 | 0.8 | 0.7 | 11.2 | 100.0 |

### NEW YORK

### Two years, 1925–26

| *Year* | *Total Under 20 Years* | *Under 1 Year* | 1–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *Total, All Ages* |
|---|---|---|---|---|---|---|---|
| Syphilis cases | 5,648 | ...... | 683 | 607 | 827 | 3,531 | 71,133 |
| *Per cent of total* | 7.9 | ...... | 1.0 | 0.9 | 1.2 | 5.0 | 100.0 |
| Gonorrhea cases | 4,118 | ...... | 538 | 513 | 277 | 2,790 | 26,994 |
| *Per cent of total* | 15.3 | ...... | 2.0 | 1.9 | 1.0 | 10.3 | 100.0 |

# GENERAL FINDINGS IN A FEW SICKNESS SURVEYS

IN the studies made in Hagerstown,* Maryland, 1921–1924, the incidence of illness in different age groups was found to be as follows:

| *Age, Years* | *Number of Illnesses* | *Annual Rate per 1,000 Population* |
|---|---|---|
| 0–4 | 2,822 | 1,588 |
| 5–9 | 3,270 | 1,554 |
| 10–14 | 2,034 | 1,187 |
| 15–19 | 1,062 | 764 |
| 20–24 | 809 | 712 |
| 25–29 | 1,020 | 825 |
| 30–34 | 1,136 | 920 |
| 35–44 | 2,006 | 924 |
| 45–54 | 1,691 | 1,009 |
| 55–64 | 863 | 959 |
| 65 and over | 875 | 1,080 |

The first observation made in the study was the extraordinarily high incidence of sickness shown in early childhood and the indication that the average individual is most free from illness between fifteen and twenty-four years.

The number of illnesses per death indicated that the greatest resistance to death is in the age period five to fourteen and the lowest resistance is in infancy and early childhood; viz., zero to four years, and in middle and old age.

Diseases of the respiratory system caused 60 per cent of the illnesses and epidemic, endemic, and infectious diseases 7.9 per cent, although this latter group caused only 2.3 per cent of the deaths. Sixty-one per cent of this group of diseases were attended by a physician and .77 per cent were hospitalized.

In a *Survey of Rural New York* made throughout the year 1927 by J. V. De Porte, M.D.,† the cases of sicknesses included in the report numbered 98,069, of which 94,857 were of the non-reportable group and 3,212 listed as reportable, or 3.3 per cent of the total. Of the reportable, 3.5 per cent were among males and 3.1 per cent among females. Of the 98,069 total cases the largest number or 27.4 per cent were cases of "colds."

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* United States Public Health Service Reports, September 14, 1926 and June 24, 1927.

† *Journal of the American Medical Association,* February 16, 1929.

Of all reportable diseases, measles represented 37.4 per cent; chickenpox, 14 per cent; whooping cough, 13.4 per cent; scarlet fever, 9.5 per cent; pneumonia (all forms), 8.1 per cent; mumps, 6.9 per cent; German measles, 3.5 per cent; tuberculosis (all forms), 3.1 per cent; diphtheria, 1.5 per cent; poliomyelitis, .6 per cent; smallpox, .5 per cent; erysipelas, .4 per cent; Vincent's angina, .3 per cent; epidemic sore throat (streptococcic), .3 per cent; typhoid fever, .2 per cent; epidemic encephalitis, .1 per cent; meningococcus meningitis, only one case.

This survey of rural New York showed the comparatively small portion of total illness due to those diseases of the reportable group, for even if venereal diseases and diarrhea and enteritis are included, the total group would represent only 5.6 per cent of all causes of illness.

In a sickness survey * of the Massachusetts towns (townships) of Shelburne and Buckland, largely rural, with populations of 1,538 and 1,555, 57.4 per cent of the former and 25.5 per cent of the latter were included in the survey, or a total of 1,278 persons. Of these 1,278, 43.3 per cent reported being ill an average of 1.2 times during the year. Communicable diseases increased in frequency with the age groups up to the ten to fourteen age group for chickenpox, German measles, and whooping cough, and up to the fifteen to nineteen age group for diphtheria, measles, mumps, and scarlet fever.

The figures for communicable diseases by age groups were as follows:

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* Lombard, H. L., and Scamman, C. L., "A Morbidity Survey of Shelburne-Buckland,," *New England Journal of Medicine,* May 10, 1928.

Per Cent who had the Disease Prior to the Survey

| | 0–4 *Years* | 5–9 *Years* | 10–14 *Years* | 15–19 *Years* | *All Years* |
|---|---|---|---|---|---|
| Population | 122 | 98 | 90 | 84 | 394 |
| Chickenpox | 15.6 | 41.8 | 61.1 | 60.7 | 42.1 |
| Diphtheria | 0.0 | 2.0 | 4.4 | 8.3 | 3.3 |
| German measles | 4.1 | 23.5 | 33.3 | 22.6 | 22.1 |
| Measles | 9.0 | 29.6 | 63.4 | 69.1 | 39.4 |
| Mumps | 1.6 | 10.2 | 18.9 | 35.7 | 15.0 |
| Scarlet fever | 0.8 | 10.2 | 14.4 | 35.7 | 13.7 |
| Whooping cough | 24.6 | 55.0 | 74.5 | 71.4 | 53.5 |

In a survey of absenteeism from school in Cleveland, 1922–1923, the days lost from illness due to communicable diseases among white children represented almost 65 per cent of total absences and about 47 per cent among colored school children.

"The common communicable diseases* of children have attacked the majority of people by the time they reach adult age. A recent study, based on the experiences of 40,000 persons tends to show that 89 per cent of the people, by the time they have reached twenty years of age, have had measles, 77 per cent whooping cough, 72 per cent mumps, 52 per cent chickenpox, 11 per cent scarlet fever, and 10 per cent diphtheria."

In a study of 6,130 school children in Missouri, made by the United States Public Health Service in 1919–1920, to determine causes of absenteeism from school due to illness, it was found that the chief cause given was colds, and the next diseases in order of importance were influenza, measles, mumps, toothache, scarlet fever, chickenpox, tonsilitis, whooping cough, and pneumonia.

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*Committee on the Cost of Medical Care, "The Extent of Illness and of Physical and Mental Defects," October, 1929.

# GENERAL TRENDS

## Amenability to Control

### MORBIDITY

THE general trends for some of the communicable diseases in regard to morbidity for the ten years, 1919–1928, are shown in the tables, on pages 34 to 86, prepared by the United States Public Health Service for this report. Taking the country as a whole, reporting of communicable disease can be taken as reliable or even approximate for only a very few diseases. Perhaps reports on diphtheria and typhoid fever of the more general diseases, and on epidemic meningitis and poliomyelitis for those less common are about the most complete.

It has to be borne in mind that even within the last ten years there has been considerable improvement in reporting in a number of States, so that more reports do not necessarily mean greater prevalence of disease. It is not merely that some municipalities are giving more complete reports; municipalities hitherto making no report are now doing so. The mortality statistics presented on page 87 are more reliable as an index of the amenability of different diseases to control. The morbidity reports are shown by sections of the country, and it will be noted that for diphtheria, typhoid, and other diseases for which fairly definite and special means of prevention are available, in those sections of the country where reporting has been fairly well established for many years, there is a distinct reduction in the number of cases within the ten year period. This is not true of measles and some other diseases for the control of which main dependence has still to be placed on general precautions to be observed by the individual or his family.

### MORBIDITY TABLES FOR THE STATES, 1919–1928

The summations of cases and populations, used in calculating rates, include only those States from which reports were received for all of the ten years. All populations are given in thousands. The District of Columbia is included with the States.

In the column at the right, under "Total," are shown the number of cases reported during the ten year period in the States considered, the average rate for the period, and the sums of the populations used. These combinations of yearly populations are significant only in calculating the average rates.

## CHICKENPOX

Cases Reported Annually by State Health Officers for the Years 1922–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | ...... | ...... | ...... | 655 | 1,077 | 1,789 | 1,258 | 1,503 | 1,450 | 1,403 | |
| New Hampshire | ...... | ...... | ...... | 149 | 89 | 250 | 225 | 138 | 136 | 310 | |
| Vermont | ...... | ...... | ...... | 1,470 | 1,251 | 1,536 | 1,788 | 1,296 | 1,678 | 1,454 | |
| Massachusetts | ...... | ...... | ...... | 5,177 | 7,983 | 8,985 | 7,516 | 8,284 | 9,927 | 8,546 | |
| Rhode Island | ...... | ...... | ...... | 142 | 258 | 323 | 463 | 339 | 557 | 352 | |
| Connecticut | ...... | ...... | ...... | 2,221 | 2,602 | 2,595 | 2,501 | 3,355 | 4,110 | 3,455 | |
| Cases 6 States | ...... | ...... | ...... | 9,814 | 13,260 | 15,478 | 13,751 | 14,915 | 17,858 | 15,520 | 100,596 |
| Population 6 States | ...... | ...... | ...... | 7,668 | 7,778 | 7,894 | 7,986 | 8,092 | 8,182 | 8,276 | 55,876 |
| Rate | ...... | ...... | ...... | 128.0 | 170.5 | 196.1 | 172.2 | 184.3 | 218.3 | 187.5 | 180.0 |
| New York | ...... | ...... | ...... | 15,481 | 20,076 | 22,478 | 19,475 | 19,657 | 24,635 | 20,306 | |
| New Jersey | ...... | ...... | ...... | 5,554 | 7,127 | 8,613 | 7,434 | 8,441 | 10,600 | 8,120 | |
| Pennsylvania | ...... | ...... | ...... | 19,112 | 19,709 | 24,639 | 17,521 | 21,504 | 24,950 | 24,335 | |
| Cases 3 States | ...... | ...... | ...... | 40,147 | 46,912 | 55,730 | 44,430 | 49,602 | 60,185 | 52,761 | 349,767 |
| Population 3 States | ...... | ...... | ...... | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 169,486 |
| Rate | ...... | ...... | ...... | 173.6 | 199.7 | 233.2 | 183.3 | 201.7 | 241.7 | 209.2 | 206.4 |
| Ohio | ...... | ...... | ...... | 8,989 | 11,023 | 14,528 | 11,799 | 12,150 | 15,289 | 14,447 | |
| Indiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Illinois | ...... | ...... | ...... | 13,442 | 11,514 | 13,864 | 11,195 | 13,698 | 12,757 | 13,684 | |
| Michigan | ...... | ...... | ...... | 5,454 | 7,258 | 10,452 | 6,782 | 7,110 | 9,192 | 7,758 | |
| Wisconsin | ...... | ...... | ...... | 5,442 | 5,861 | 9,674 | 8,289 | 9,196 | 9,737 | 11,541 | |
| Cases 4 States | ...... | ...... | ...... | 33,327 | 35,656 | 48,518 | 38,065 | 42,154 | 46,975 | 47,430 | 292,125 |
| Population 4 States | ...... | ...... | ...... | 19,459 | 19,857 | 20,320 | 20,692 | 21,084 | 21,414 | 21,766 | 144,592 |
| Rate | ...... | ...... | ...... | 171.3 | 179.6 | 238.8 | 184.0 | 199.9 | 219.4 | 217.9 | 202.0 |
| Minnesota | ...... | ...... | ...... | 2,968 | 4,327 | 6,563 | 5,046 | 6,514 | 6,730 | 7,026 | |
| Iowa | ...... | ...... | ...... | 449 | 843 | 649 | 1,111 | 1,616 | 1,608 | 2,114 | |
| Missouri | ...... | ...... | ...... | 1,524 | 2,533 | 2,043 | 2,616 | 3,026 | 3,150 | 2,863 | |
| North Dakota | ...... | ...... | ...... | 191 | 399 | 694 | 642 | 821 | 811 | 649 | |
| South Dakota | ...... | ...... | ...... | 347 | 686 | 909 | 517 | 784 | 571 | 515 | |
| Nebraska | ...... | ...... | ...... | 1,058 | 635 | 999 | 834 | 1,243 | 1,869 | 1,742 | |
| Kansas | ...... | ...... | ...... | 2,681 | 2,932 | 4,148 | 3,813 | 3,945 | 5,125 | 4,839 | |
| Cases 7 States | ...... | ...... | ...... | 9,218 | 12,355 | 16,005 | 14,579 | 17,949 | 19,864 | 19,748 | 109,718 |
| Population 7 States | ...... | ...... | ...... | 12,752 | 12,842 | 12,941 | 13,021 | 13,108 | 13,182 | 13,261 | 91,107 |
| Rate | ...... | ...... | ...... | 72.3 | 96.2 | 123.7 | 112.0 | 136.9 | 150.7 | 148.9 | 120.4 |
| Delaware | ...... | ...... | ...... | 364 | 151 | 160 | 95 | 131 | 124 | 142 | |
| Maryland | ...... | ...... | ...... | 2,960 | 3,661 | 4,638 | 3,491 | 3,944 | 4,263 | 4,092 | |
| District of Columbia | ...... | ...... | ...... | 1,186 | 1,260 | 1,625 | 776 | 1,035 | 1,487 | 702 | |
| Virginia | ...... | ...... | ...... | 4,816 | 6,005 | 7,182 | 5,309 | 6,269 | 6,603 | 5,207 | |
| West Virginia | ...... | ...... | ...... | 1,245 | 1,662 | 1,883 | 1,495 | 1,950 | 2,040 | 2,210 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | ...... | ...... | ...... | 4,573 | 3,974 | 5,981 | 3,845 | 4,941 | 4,818 | 4,695 | |
| South Carolina | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Georgia | ...... | ...... | ...... | 619 | 515 | 818 | 1,127 | 1,159 | 1,246 | 1,232 | |
| Florida | ...... | ...... | ...... | 221 | 337 | 414 | 382 | 1,091 | 1,052 | 1,461 | |
| Cases 8 States | ...... | ...... | ...... | 15,984 | 17,571 | 22,701 | 16,520 | 20,520 | 21,633 | 19,741 | 134,670 |
| Population 8 States | ...... | ...... | ...... | 12,881 | 13,126 | 13,402 | 13,614 | 13,850 | 14,053 | 14,263 | 95,189 |
| Rate | ...... | ...... | ...... | 124.1 | 133.9 | 169.4 | 121.3 | 148.2 | 153.9 | 138.4 | 141.5 |
| Kentucky | ...... | ...... | ...... | 517 | 639 | 552 | 499 | 677 | 922 | 734 | |
| Tennessee | ...... | ...... | ...... | 1,358 | 1,184 | 2,401 | 1,614 | 1,692 | 1,858 | 1,242 | |
| Alabama | ...... | ...... | ...... | 977 | 1,227 | 1,930 | 1,423 | 1,804 | 1,340 | 1,535 | |
| Mississippi | ...... | ...... | ...... | 4,195 | 4,034 | 6,386 | 6,220 | 6,850 | 6,417 | 6,679 | |
| Cases 4 States | ...... | ...... | ...... | 7,047 | 7,084 | 11,269 | 9,756 | 11,023 | 10,537 | 10,190 | 66,906 |
| Population 4 States | ...... | ...... | ...... | 9,043 | 9,108 | 9,184 | 9,246 | 9,309 | 9,363 | 9,419 | 64,672 |
| Rate | ...... | ...... | ...... | 77.9 | 77.8 | 122.7 | 105.5 | 118.4 | 112.5 | 108.2 | 103.5 |
| Arkansas | ...... | ...... | ...... | 734 | 922 | 1,020 | 838 | 944 | 1,303 | 1,153 | |
| Louisiana | ...... | ...... | ...... | 66 | 673 | 274 | 381 | 429 | 396 | 343 | |
| Oklahoma | ...... | ...... | ...... | 342 | 432 | 575 | 1,077 | 924 | 1,022 | 900 | |
| Texas | ...... | ...... | ...... | 1,858 | 1,567 | 1,959 | 2,399 | 2,053 | 1,906 | 2,448 | |
| Cases 4 States | ...... | ...... | ...... | 3,000 | 3,594 | 3,828 | 4,695 | 4,350 | 4,627 | 4,844 | 28,938 |
| Population 4 States | ...... | ...... | ...... | 10,681 | 10,882 | 11,105 | 11,286 | 11,477 | 11,638 | 11,807 | 78,882 |
| Rate | ...... | ...... | ...... | 28.1 | 33.0 | 34.5 | 41.6 | 37.9 | 39.8 | 41.0 | 36.7 |
| Montana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Idaho | ...... | ...... | ...... | 312 | 436 | 558 | 345 | 645 | 634 | 539 | |
| Wyoming | ...... | ...... | ...... | 264 | 444 | 522 | 511 | 541 | 425 | 535 | |
| Colorado | ...... | ...... | ...... | 1,306 | 1,810 | 2,666 | 1,941 | 2,100 | 2,188 | 3,006 | |
| New Mexico | ...... | ...... | ...... | 436 | 414 | 539 | 657 | 545 | 873 | 422 | |
| Arizona | ...... | ...... | ...... | 65 | 220 | 180 | 284 | 341 | 475 | 348 | |
| Utah | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nevada | ...... | ...... | ...... | 63 | 112 | 81 | 73 | 65 | 87 | 69 | |
| Cases 6 States | ...... | ...... | ...... | 2,446 | 3,436 | 4,546 | 3,811 | 4,237 | 4,682 | 4,919 | 28,077 |
| Population 6 States | ...... | ...... | ...... | 2,477 | 2,539 | 2,609 | 2,666 | 2,727 | 2,777 | 2,830 | 18,625 |
| Rate | ...... | ...... | ...... | 98.7 | 135.3 | 174.2 | 142.9 | 155.4 | 168.6 | 173.8 | 150.7 |
| Washington | ...... | ...... | ...... | 2,794 | 2,952 | 3,594 | 4,154 | 4,059 | 3,871 | 4,712 | |
| Oregon | ...... | ...... | ...... | 667 | 902 | 950 | 1,123 | 1,612 | 1,483 | 1,910 | |
| California | ...... | ...... | ...... | 5,386 | 7,928 | 13,723 | 10,850 | 12,111 | 17,549 | 17,790 | |
| Cases 3 States | ...... | ...... | ...... | 8,847 | 11,782 | 18,267 | 16,127 | 17,782 | 22,903 | 24,412 | 120,120 |
| Population 3 States | ...... | ...... | ...... | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 45,752 |
| Rate | ...... | ...... | ...... | 147.8 | 191.0 | 286.2 | 246.1 | 264.2 | 332.7 | 346.5 | 262.5 |
| Cases 45 States | ...... | ...... | ...... | 129,830 | 151,650 | 196,342 | 161,734 | 182,532 | 209,264 | 199,565 | 1,230,917 |
| Pcpulation 45 States | ...... | ...... | ...... | 104,084 | 105,798 | 107,733 | 109,302 | 110,976 | 112,396 | 113,892 | 764,181 |
| Rate | ...... | ...... | ...... | 124.7 | 143.3 | 182.2 | 148.0 | 164.5 | 186.2 | 175.2 | 161.1 |

## DIPHTHERIA

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 363 | 616 | 949 | 599 | 454 | 585 | 259 | 160 | 224 | 210 | |
| New Hampshire | ...... | 521 | 736 | 364 | 350 | 226 | 170 | 148 | 110 | 100 | |
| Vermont | 232 | 266 | 407 | 341 | 265 | 227 | 166 | 99 | 101 | 104 | |
| Massachusetts | 7,928 | 7,513 | 9,100 | 8,826 | 9,018 | 7,290 | 4,482 | 3,401 | 4,750 | 4,052 | |
| Rhode Island | 1,029 | 1,369 | 1,052 | 962 | 816 | 749 | 733 | 412 | 676 | 641 | |
| Connecticut | 3,388 | 3,754 | 3,361 | 2,924 | 2,426 | 2,110 | 1,712 | 1,240 | 1,455 | 1,214 | |
| Cases 5 States | 12,940 | 13,518 | 14,869 | 13,652 | 12,979 | 10,961 | 7,152 | 5,312 | 7,206 | 6,221 | 104,810 |
| Population 5 States | 6,914 | 7,006 | 7,122 | 7,221 | 7,329 | 7,444 | 7,534 | 7,638 | 7,727 | 7,820 | 73,755 |
| Rate | 187.2 | 192.9 | 208.8 | 189.1 | 177.1 | 147.2 | 94.9 | 69.5 | 93.3 | 80.0 | 142.1 |
| New York | 25,077 | 24,806 | 27,029 | 18,868 | 15,090 | 15,571 | 13,423 | 10,678 | 17,421 | 13,674 | |
| New Jersey | 7,270 | 6,931 | 7,901 | 7,613 | 6,091 | 4,382 | 4,139 | 4,002 | 5,782 | 6,013 | |
| Pennsylvania | 17,717 | 16,959 | 20,794 | 16,617 | 15,893 | 12,597 | 10,179 | 8,443 | 9,939 | 9,120 | |
| Cases 3 States | 50,064 | 48,696 | 55,724 | 43,098 | 37,074 | 32,550 | 27,741 | 23,123 | 33,142 | 28,807 | 380,019 |
| Population 3 States | 22,110 | 22,417 | 22,815 | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 236,828 |
| Rate | 226.4 | 217.2 | 244.2 | 186.3 | 157.8 | 136.2 | 114.5 | 94.0 | 133.1 | 114.2 | 160.5 |
| Ohio | 7,255 | 8,587 | 17,847 | 12,454 | 10,044 | 6,232 | 5,237 | 6,636 | 7,137 | 4,843 | |
| Indiana | 2,603 | 2,566 | 6,542 | 4,625 | 4,088 | 3,088 | 1,958 | 2,149 | 1,893 | 1,616 | |
| Illinois | 9,911 | 14,108 | 20,793 | 15,162 | 10,677 | 6,859 | 5,004 | 4,529 | 6,272 | 7,107 | |
| Michigan | 6,998 | 10,407 | 12,099 | 8,513 | 7,725 | 6,012 | 3,925 | 5,380 | 4,575 | 3,724 | |
| Wisconsin | 2,185 | 3,485 | 5,175 | 3,593 | 4,400 | 2,775 | 2,363 | 2,054 | 1,862 | 1,155 | |
| Cases 5 States | 28,952 | 39,153 | 62,456 | 44,347 | 36,934 | 24,966 | 18,514 | 20,748 | 21,739 | 18,445 | 316,254 |
| Population 5 States | 21,310 | 21,636 | 22,130 | 22,459 | 22,888 | 23,386 | 23,787 | 24,208 | 24,564 | 24,942 | 231,310 |
| Rate | 135.9 | 181.0 | 282.2 | 197.5 | 161.4 | 106.8 | 77.8 | 85.7 | 88.5 | 74.0 | 136.7 |
| Minnesota | 4,541 | 3,616 | 4,380 | 4,253 | 4,430 | 3,940 | 3,778 | 2,957 | 1,931 | 1,363 | |
| Iowa | 997 | 1,195 | 2,053 | 2,273 | 1,653 | 863 | 1,047 | 873 | 1,015 | 582 | |
| Missouri | ...... | ...... | ...... | 3,920 | 4,193 | 3,116 | 3,216 | 3,006 | 2,609 | 2,240 | |
| North Dakota | 394 | 763 | 863 | 450 | 716 | 410 | 256 | 286 | 216 | 315 | |
| South Dakota | 295 | 516 | 660 | 610 | 723 | 420 | 280 | 262 | 196 | 111 | |
| Nebraska | 423 | 909 | 1,638 | 1,290 | 989 | 861 | 423 | 292 | 454 | 655 | |
| Kansas | 2,077 | 4,375 | 8,412 | 4,116 | 2,621 | 1,706 | 1,101 | 903 | 1,072 | 793 | |
| Cases 6 States | 8,727 | 11,374 | 18,006 | 12,992 | 11,132 | 8,200 | 6,885 | 5,573 | 4,884 | 3,819 | 91.592 |
| Population 6 States | 9,099 | 9,171 | 9,253 | 9,314 | 9,389 | 9,471 | 9,537 | 9,610 | 9,672 | 9,738 | 94,254 |
| Rate | 95.9 | 124.0 | 194.6 | 139.5 | 118.6 | 86.6 | 72.2 | 58.0 | 50.5 | 39.2 | 97.2 |
| Delaware | ...... | 237 | 193 | 145 | 183 | 194 | 204 | 118 | 94 | 42 | |
| Maryland | 2,747 | 2,561 | 2,597 | 2,646 | 2,354 | 1,845 | 1,510 | 1,356 | 2,159 | 1,539 | |
| District of Columbia | 1,169 | 713 | 935 | 735 | 564 | 398 | 685 | 940 | 929 | 1,267 | |
| Virginia | 3,108 | 3,993 | 5,638 | 7,109 | 4,646 | 3,287 | 3,064 | 3,111 | 2,617 | 2,355 | |
| West Virginia | 2,244 | 2,073 | 3,938 | 2,653 | 1,790 | 1,291 | 1,085 | 1,245 | 958 | 953 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 3,519 | 3,422 | 5,136 | 8,136 | 4,671 | 4,093 | 3,437 | 3,198 | 3,034 | 3,826 | |
| South Carolina | 2,129 | 2,158 | 2,992 | 2,914 | 2,223 | 2,348 | ...... | 3,001 | 1,665 | 1,693 | |
| Georgia | 1,551 | 1,436 | 1,531 | 1,812 | 1,098 | 1,012 | 943 | 1,498 | 1,315 | 862 | |
| Florida | 510 | 578 | 865 | 901 | 611 | 664 | 753 | 1,224 | 1,096 | 588 | |
| Cases 6 States | 14,848 | 14,776 | 20,640 | 23,992 | 15,734 | 12,590 | 11,477 | 12,572 | 12,108 | 11,390 | 150,127 |
| Population 6 States | 12,000 | 12,182 | 12,452 | 12,652 | 12,894 | 13,167 | 13,376 | 13,610 | 13,810 | 14,019 | 130,162 |
| Rate | 123.7 | 121.3 | 165.8 | 189.6 | 122.0 | 95.6 | 85.8 | 92.4 | 87.7 | 81.2 | 115.3 |
| Kentucky | ...... | ...... | ...... | 2,553 | 1,257 | 724 | 640 | 818 | 718 | 727 | |
| Tennessee | ...... | ...... | 3,091 | 1,299 | 960 | 788 | 726 | 1711 | 1,359 | 1,307 | |
| Alabama | 1,256 | 1,053 | 1,507 | 1,330 | 1,590 | 1,155 | 1,296 | 1,584 | 2,527 | 2,183 | |
| Mississippi | 1,676 | 2,225 | 3,095 | 2,387 | 1,766 | 1,217 | 1,370 | 1,369 | 1,630 | 1,225 | |
| Cases 2 States | 2,932 | 3,278 | 4,602 | 3,717 | 3,356 | 2,372 | 2,666 | 2,953 | 4,157 | 3,408 | 33,441 |
| Population 2 States | 4,128 | 4,150 | 4,182 | 4,203 | 4,231 | 4,263 | 4,290 | 4,317 | 4,340 | 4,364 | 42,468 |
| Rate | 71.0 | 79.0 | 110.0 | 88.4 | 79.3 | 55.6 | 62.1 | 68.4 | 95.8 | 78.1 | 78.7 |
| Arkansas | 738 | 1,115 | 891 | 557 | 499 | 348 | 321 | 254 | 572 | 564 | |
| Louisiana | 629 | 599 | 760 | 1,088 | 1,251 | 971 | 947 | 970 | 1,406 | 1,073 | |
| Oklahoma | ...... | ...... | 1,202 | 391 | 606 | 715 | 1,080 | 1,057 | 2,128 | 1,843 | |
| Texas | ...... | 2,419 | 2,203 | 2,044 | 1,364 | 1,711 | 1,636 | 1,673 | 2,387 | 1,969 | |
| Cases 2 States | 1,367 | 1,714 | 1,651 | 1,645 | 1,750 | 1,319 | 1,268 | 1,224 | 1,978 | 1,637 | 15,553 |
| Population 2 States | 3,534 | 3,567 | 3,616 | 3,649 | 3,692 | 3,740 | 3,780 | 3,822 | 3,857 | 3,894 | 37,151 |
| Rate | 38.7 | 48.1 | 45.7 | 45.1 | 47.4 | 35.3 | 33.5 | 32.0 | 51.3 | 42.0 | 41.9 |
| Montana | 366 | 269 | 412 | 426 | 456 | 549 | 329 | 208 | 182 | 231 | |
| Idaho | ...... | 145 | 254 | 244 | 212 | 146 | 416 | 272 | 119 | 76 | |
| Wyoming | 124 | 89 | 186 | 120 | 70 | 60 | 97 | 70 | 70 | 108 | |
| Colorado | 557 | 1,006 | 2,619 | 2,260 | 2,590 | 1,469 | 1,318 | 1,042 | 979 | 626 | |
| New Mexico | ...... | 823 | 1,400 | 1,188 | 1,161 | 503 | 231 | 208 | 258 | 261 | |
| Arizona | ...... | 87 | 179 | 124 | 173 | 146 | 127 | 166 | 249 | 288 | |
| Utah | 434 | ...... | 651 | ...... | 576 | ...... | 838 | 1,271 | 733 | 260 | |
| Nevada | ...... | ...... | 5 | 38 | 12 | 41 | 9 | 8 | 23 | 9 | |
| Cases 2 States | 681 | 1,095 | 2,805 | 2,380 | 2,660 | 1,529 | 1,415 | 1,112 | 1,049 | 734 | 15,460 |
| Population 2 States | 1,124 | 1,144 | 1,172 | 1,192 | 1,217 | 1,246 | 1,269 | 1,295 | 1,315 | 1,337 | 12,311 |
| Rate | 60.6 | 95.7 | 239.3 | 199.7 | 218.6 | 122.7 | 111.5 | 85.9 | 79.8 | 54.9 | 125.6 |
| Washington | 1,003 | 1,353 | 1,356 | 1,177 | 1,179 | 1,623 | 1,424 | 1,350 | 1,006 | 626 | |
| Oregon | 308 | 498 | 2,047 | 796 | 1,108 | 1,404 | 1,370 | 936 | 609 | 542 | |
| California | 3,073 | 5,784 | 9,465 | 8,714 | 9,519 | 11,110 | 5,575 | 6,128 | 6,412 | 4,741 | |
| Cases 3 States | 4,384 | 7,635 | 12,868 | 10,687 | 11,806 | 14,137 | 8,369 | 8,414 | 8,027 | 5,909 | 92,236 |
| Population 3 States | 5,497 | 5,635 | 5,846 | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 62,730 |
| Rate | 79.8 | 135.5 | 220.1 | 178.5 | 191.3 | 221.5 | 127.7 | 125.0 | 116.6 | 83.9 | 147.0 |
| Cases 34 States | 124,895 | 141,239 | 193,621 | 156,510 | 133,425 | 108,624 | 85,487 | 81,031 | 94,290 | 80,370 | 1,199,492 |
| Population 34 States | 85,716 | 86,908 | 88,588 | 89,807 | 91,306 | 92,995 | 94,364 | 95,829 | 97,072 | 98,384 | 920,969 |
| Rate | 145.7 | 162.5 | 218.6 | 174.3 | 146.1 | 116.8 | 90.6 | 84.6 | 97.1 | 81.7 | 130.2 |

## INFLUENZA

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 3,379 | 14,332 | 234 | 2,533 | 3,719 | 208 | 1,873 | 2,591 | 790 | 951 | |
| New Hampshire | ...... | 3,014 | 7 | 141 | 28 | ...... | ...... | ...... | 789 | 535 | |
| Vermont | 7,882 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 456 | |
| Massachusetts | 40,416 | 36,312 | 735 | 7,453 | 2,466 | 405 | 1,244 | 2,194 | 515 | 1,305 | |
| Rhode Island | 5,690 | 7,250 | 113 | 995 | 37 | 12 | 135 | 662 | 122 | 154 | |
| Connecticut | 10,664 | 23,931 | 281 | 5,941 | 2,543 | ...... | ...... | 1,686 | 366 | 1,080 | |
| Cases 3 States | 49,485 | 57,894 | 1,082 | 10,981 | 6,222 | 625 | 3,252 | 5,447 | 1,427 | 2,410 | 138,825 |
| Population 3 States | 5,195 | 5,260 | 5,335 | 5,407 | 5,480 | 5,554 | 5,610 | 5,680 | 5,739 | 5,801 | 55,061 |
| Rate | 952.6 | 1,100.6 | 20.3 | 203.1 | 113.5 | 11.3 | 58.0 | 95.9 | 24.9 | 41.5 | 252.1 |
| New York | 68,873 | 127,772 | 3,812 | 35,581 | 27,136 | 2,999 | 4,087 | ...... | ...... | ...... | |
| New Jersey | 22,544 | 29,110 | 985 | 7,430 | 3,519 | 688 | 669 | 1,599 | 744 | 2,591 | |
| Pennsylvania | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 1 State | 22,544 | 29,110 | 985 | 7,430 | 3,519 | 688 | 669 | 1,599 | 744 | 2,591 | 69,879 |
| Population 1 State | 3,124 | 3,187 | 3,281 | 3,345 | 3,427 | 3,522 | 3,600 | 3,680 | 3,749 | 3,821 | 34,736 |
| Rate | 721.6 | 913.4 | 30.0 | 222.1 | 102.7 | 19.5 | 18.6 | 43.5 | 19.8 | 67.8 | 201.2 |
| Ohio | 89,264 | 72,041 | ...... | 3,860 | 6,454 | ...... | ...... | 4,263 | ...... | 18,229 | |
| Indiana | 22,396 | 27,091 | 499 | 1,409 | 2,054 | 1,309 | 3,595 | 3,341 | 1,426 | 8,727 | |
| Illinois | 27,654 | 168,955 | 2,574 | 15,895 | 7,366 | 1,302 | 2,981 | 4,566 | 1,829 | 10,915 | |
| Michigan | ...... | ...... | ...... | 1,339 | ...... | ...... | ...... | ...... | ...... | 16,817 | |
| Wisconsin | 7,020 | 37,950 | 1,037 | 5,853 | 10,680 | 1,178 | 3,671 | 4,805 | 2,205 | 36,477 | |
| Cases 3 States | 57,070 | 233,996 | 4,110 | 23,157 | 20,100 | 3,789 | 10,247 | 12,712 | 5,460 | 56,119 | 426,760 |
| Population 3 States | 11,978 | 12,116 | 12,327 | 12,467 | 12,650 | 12,862 | 13,033 | 13,212 | 13,364 | 13,525 | 127,534 |
| Rate | 476.5 | 1,931.3 | 33.3 | 185.7 | 158.9 | 29.5 | 78.6 | 96.2 | 40.9 | 414.9 | 334.6 |
| Minnesota | 12,945 | 4,436 | ...... | 1,254 | 904 | 271 | 598 | 649 | 581 | 9,662 | |
| Iowa | ...... | 13,093 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 5,009 | |
| Missouri | ...... | ...... | ...... | 3,723 | 10,829 | ...... | ...... | ...... | ...... | 18,178 | |
| North Dakota | 750 | 11,645 | ...... | ...... | ...... | ...... | ...... | 531 | ...... | 29,534 | |
| South Dakota | 8,991 | 7,479 | ...... | 198 | ...... | ...... | ...... | ...... | ...... | 1,045 | |
| Nebraska | 23,683 | 22,887 | 108 | 1,194 | 1,301 | ...... | ...... | ...... | ...... | 6,514 | |
| Kansas | 41,799 | 70,243 | 259 | 5,119 | 5,088 | 332 | 963 | 1,105 | ...... | 112,503 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Delaware | ...... | 413 | 128 | 183 | 341 | 66 | 88 | 167 | ...... | 89 | |
| Maryland | 27,618 | 31,924 | 2,848 | 5,557 | 18,453 | 2,156 | 2,125 | 6,834 | 3,077 | 3,814 | |
| District of Columbia | 4,275 | 4,115 | 66 | 102 | 410 | 66 | ...... | 174 | 153 | 656 | |
| Virginia | 69,151 | 104,497 | 10,973 | 51,406 | 101,482 | 27,303 | 36,270 | 52,765 | 33,375 | 85,378 | |
| West Virginia | 5,079 | 39,665 | 741 | 7,640 | 10,208 | 1,440 | 1,506 | 4,363 | 1,303 | 18,668 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 14,126 | 76,308 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| South Carolina | 11,578 | 6,728 | ...... | 19,967 | 5,294 | 487 | ...... | 49,579 | 33,857 | 67,272 | |
| Georgia | 7,147 | 36,193 | 620 | 6,612 | 7,140 | 1,223 | 11,996 | 12,024 | 5,602 | 23,888 | |
| Florida | 2,010 | 10,349 | 649 | 1,635 | 1,011 | 345 | 761 | 1,213 | 481 | 1,631 | |
| Cases 5 States | 111,005 | 222,628 | 15,831 | 72,850 | 138,294 | 32,467 | 52,658 | 77,199 | 43,838 | 133,379 | 900,149 |
| Population 5 States | 9,027 | 9,162 | 9,362 | 9,515 | 9,696 | 9,898 | 10,050 | 10,224 | 10,373 | 10,529 | 97,836 |
| Rate | 1,229.7 | 2,429.9 | 169.1 | 765.6 | 1,426.3 | 328.0 | 524.0 | 755.1 | 422.6 | 1,266.8 | 920.1 |
| Kentucky | ...... | ...... | ...... | 5,781 | 9,482 | 655 | ...... | ...... | ...... | 2,543 | |
| Tennessee | ...... | ...... | ...... | ...... | ...... | 3,460 | 4,543 | 8,077 | 3,864 | 24,474 | |
| Alabama | 9,420 | 17,749 | ...... | 2,780 | 12,112 | 3,344 | 9,976 | 13,795 | 3,146 | 16,038 | |
| Mississippi | 64,738 | 53,289 | 4,920 | 44,503 | 82,313 | 20,350 | 62,066 | 108,687 | 31,506 | 170,679 | |
| Cases 1 State | 64,738 | 53,289 | 4,920 | 44,503 | 82,313 | 20,350 | 62,066 | 108,687 | 31,506 | 170,679 | 643,051 |
| Population 1 State | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 17,910 |
| Rate | 3,614.6 | 2,975.4 | 274.7 | 2,484.8 | 4,595.9 | 1,136.2 | 3,465.4 | 6,068.5 | 1,759.1 | 9,529.8 | 3,590.5 |
| Arkansas | 7,016 | 34,088 | 1,190 | 4,628 | 15,825 | 3,979 | 5,858 | 7,204 | 2,836 | 12,426 | |
| Louisiana | 40,565 | 19,854 | 402 | 13,922 | 6,707 | 1,302 | 2,462 | 5,262 | 1,000 | 7,578 | |
| Oklahoma | ...... | ...... | 97 | 991 | 6,454 | 864 | 11,379 | 18,952 | 4,649 | 30,724 | |
| Texas | ...... | 22,414 | 676 | 3,690 | 14,302 | 3,827 | 24,920 | 14,598 | 2,946 | 6,703 | |
| Cases 2 States | 47,581 | 53,942 | 1,592 | 18,550 | 22,532 | 5,281 | 8,320 | 12,466 | 3,836 | 20,004 | 194,104 |
| Population 2 States | 3,534 | 3,567 | 3,616 | 3,649 | 3,692 | 3,740 | 3,780 | 3,822 | 3,857 | 3,894 | 37,151 |
| Rate | 1,346.4 | 1,512.3 | 44.0 | 508.4 | 610.3 | 141.2 | 220.1 | 326.2 | 99.5 | 513.7 | 522.5 |
| Montana | 5,860 | 7,308 | 71 | 1,869 | 361 | 68 | 98 | 794 | ...... | 18,655 | |
| Idaho | ...... | 9,357 | ...... | 1,031 | ...... | ...... | ...... | 610 | ...... | 529 | |
| Wyoming | 3,119 | 3,930 | 89 | 1,701 | 216 | ...... | 60 | 161 | ...... | 1,113 | |
| Colorado | 4,603 | 12,673 | ...... | 1,824 | ...... | ...... | ...... | ...... | ...... | 6,775 | |
| New Mexico | ...... | 5,132 | 42 | 3,321 | 499 | 81 | 469 | 911 | 45 | 5,402 | |
| Arizona | ...... | 1,736 | ...... | ...... | ...... | ...... | 239 | 736 | ...... | 4,353 | |
| Utah | 29,536 | ...... | 188 | ...... | 5,235 | ...... | 1,796 | 5,842 | 712 | 11,145 | |
| Nevada | ...... | ...... | 32 | 1,274 | 250 | 123 | 32 | 196 | 33 | 1,507 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Washington | 8,711 | 23,108 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 7,030 | |
| Oregon | 10,780 | 8,738 | ...... | 1,983 | 349 | ...... | 1,602 | 2,868 | 3,723 | 10,567 | |
| California | 81,574 | 58,976 | 2,565 | 45,433 | 8,081 | 1,106 | 2,636 | 6,097 | 1,645 | 49,065 | |
| Cases 1 State | 81,574 | 58,976 | 2,565 | 45,433 | 8,081 | 1,106 | 2,636 | 6,097 | 1,645 | 49,065 | 257,178 |
| Population 1 State | 3,373 | 3,479 | 3,640 | 3,747 | 3,887 | 4,049 | 4,180 | 4,316 | 4,433 | 4,556 | 39,660 |
| Rate | 2,418.4 | 1,695.2 | 70.5 | 1,212.5 | 207.9 | 27.3 | 63.1 | 141.3 | 37.1 | 1,076.9 | 648.5 |
| Cases 16 States | 433,997 | 709,835 | 31,085 | 222,904 | 281,061 | 64,306 | 139,848 | 224,207 | 88,456 | 434,247 | 2,629,946 |
| Population 16 States | 38,022 | 38,562 | 39,352 | 39,921 | 40,623 | 41,416 | 42,044 | 42,725 | 43,306 | 43,917 | 409,888 |
| Rate | 1,141.4 | 1,840.8 | 79.0 | 558.4 | 691.9 | 155.3 | 332.6 | 524.8 | 204.3 | 988.8 | 641.6 |

## MALARIA

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| New Hampshire | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Vermont | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Massachusetts | 72 | 60 | 49 | 48 | 23 | 36 | 11 | 20 | 9 | 16 | |
| Rhode Island | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Connecticut | 8 | 22 | 27 | 80 | 47 | 37 | 22 | 13 | 18 | 6 | |
| Cases 2 States | 80 | 82 | 76 | 128 | 70 | 73 | 33 | 33 | 27 | 22 | 624 |
| Population 2 States | 5,194 | 5,274 | 5,371 | 5,453 | 5,544 | 5,641 | 5,716 | 5,803 | 5,878 | 5,957 | 55,831 |
| Rate | 1.5 | 1.6 | 1.4 | 2.3 | 1.3 | 1.3 | 0.6 | 0.6 | 0.5 | 0.4 | 1.1 |
| New York | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| New Jersey | 124 | 106 | 88 | 78 | 64 | 47 | 16 | 11 | 12 | 7 | |
| Pennsylvania | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 1 State | 124 | 106 | 88 | 78 | 64 | 47 | 16 | 11 | 12 | 7 | 553 |
| Population 1 State | 3,124 | 3,187 | 3,281 | 3,345 | 3,427 | 3,522 | 3,600 | 3,680 | 3,749 | 3,821 | 34,736 |
| Rate | 4.0 | 3.3 | 2.7 | 2.3 | 1.9 | 1.3 | 0.4 | 0.3 | 0.3 | 0.2 | 1.6 |
| Ohio | 53 | 67 | 40 | 51 | 22 | 14 | 17 | 17 | 21 | 32 | |
| Indiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Illinois | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Michigan | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Wisconsin | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 1 State | 53 | 67 | 40 | 51 | 22 | 14 | 17 | 17 | 21 | 32 | 334 |
| Population 1 State | 5,708 | 5,809 | 5,961 | 6,062 | 6,194 | 6,347 | 6,470 | 6,600 | 6,710 | 6,826 | 62,687 |
| Rate | 0.9 | 1.2 | 0.7 | 0.8 | 0.4 | 0.2 | 0.3 | 0.3 | 0.3 | 0.5 | 0.5 |
| Minnesota | 5 | 1 | 2 | 1 | 2 | 0 | 0 | 2 | 5 | 1 | |
| Iowa | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Missouri | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| North Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| South Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nebraska | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Kansas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 1 State | 5 | 1 | 2 | 1 | 2 | 0 | 0 | 2 | 5 | 1 | 19 |
| Population 1 State | 2,371 | 2,403 | 2,450 | 2,482 | 2,524 | 2,572 | 2,611 | 2,651 | 2,686 | 2,722 | 25,472 |
| Rate | 0.2 | 0.04 | 0.1 | 0.04 | 0.1 | ...... | ...... | 0.1 | 0.2 | 0.04 | 0.1 |
| Delaware | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Maryland | 135 | 136 | 411 | 322 | 190 | 62 | 52 | 40 | 26 | 12 | |
| District of Columbia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Virginia | 4,440 | 4,575 | 3,806 | 3,689 | 3,610 | 2,485 | 1,838 | 1,641 | 1,413 | 1,106 | |
| West Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| South Carolina | 737 | 1,131 | 280 | 272 | 163 | 252 | 11,118 | 14,224 | 17,245 | 20,635 | |
| Georgia | 3,345 | 5,108 | 2,370 | 1,888 | 1,475 | 763 | 2,452 | 2,039 | 2,233 | 5,080 | |
| Florida | 1,895 | 1,862 | 994 | 971 | 1,043 | 1,002 | 676 | 400 | 360 | 844 | |
| Cases 5 States | 10,552 | 12,812 | 7,861 | 7,142 | 6,481 | 4,564 | 16,136 | 18,344 | 21,277 | 27,677 | 132,846 |
| Population 5 States | 9,251 | 9,378 | 9,567 | 9,712 | 9,883 | 10,074 | 10,216 | 10,381 | 10,522 | 10,669 | 99,653 |
| Rate | 114.1 | 136.6 | 82.2 | 73.5 | 65.6 | 45.3 | 157.9 | 176.7 | 202.2 | 259.4 | 133.3 |
| Kentucky | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Tennessee | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Alabama | 2,517 | 756 | 793 | 1,445 | 6,850 | 4,396 | 3,302 | 2,634 | 3,698 | 6,477 | |
| Mississippi | 112,554 | 118,376 | 121,207 | 105,747 | 95,222 | 79,631 | 71,950 | 71,871 | 88,302 | 98,885 | |
| Cases 2 States | 115,071 | 119,132 | 122,000 | 107,192 | 102,072 | 84,027 | 75,252 | 74,505 | 92,000 | 105,362 | 996,613 |
| Population 2 States | 4,128 | 4,150 | 4,182 | 4,203 | 4,231 | 4,263 | 4,290 | 4,317 | 4,340 | 4,364 | 42,468 |
| Rate | 2,787.6 | 2,870.7 | 2,917.3 | 2,550.4 | 2,412.5 | 1,971.1 | 1,754.1 | 1,725.9 | 2,119.8 | 2,414.3 | 2,346.7 |
| Arkansas | 5,015 | 8,022 | 6,360 | 4,111 | 5,980 | 4,039 | 3,944 | 3,334 | 6,795 | 6,945 | |
| Louisiana | 2,411 | 2,292 | 2,306 | 1,597 | 1,145 | 1,104 | 828 | 984 | 2,194 | 1,789 | |
| Oklahoma | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Texas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 2 States | 7,426 | 10,314 | 8,666 | 5,708 | 7,125 | 5,143 | 4,772 | 4,318 | 8,989 | 8,734 | 71,195 |
| Population 2 States | 3,534 | 3,567 | 3,616 | 3,649 | 3,692 | 3,740 | 3,780 | 3,822 | 3,857 | 3,894 | 37,151 |
| Rate | 210.1 | 289.2 | 239.7 | 156.4 | 193.0 | 137.5 | 126.2 | 113.0 | 233.1 | 224.3 | 191.6 |
| Montana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Idaho | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Wyoming | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Colorado | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| New Mexico | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Arizona | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Utah | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nevada | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Washington | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Oregon | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| California | 1,056 | 479 | 269 | 215 | 196 | 107 | 77 | 94 | 58 | 76 | |
| Cases 1 State | 1,056 | 479 | 269 | 215 | 196 | 107 | 77 | 94 | 58 | 76 | 2,627 |
| Population 1 State | 3,373 | 3,479 | 3,640 | 3,747 | 3,887 | 4,049 | 4,180 | 4,316 | 4,433 | 4,556 | 39,660 |
| Rate | 31.3 | 13.8 | 7.4 | 5.7 | 5.0 | 2.6 | 1.8 | 2.2 | 1.3 | 1.7 | 6.6 |
| Cases 15 States | 134,367 | 142,993 | 139,002 | 120,515 | 116,032 | 93,975 | 96,303 | 97,324 | 122,389 | 141,911 | 1,204,811 |
| Population 15 States | 36,683 | 37,247 | 38,068 | 38,653 | 39,382 | 40,208 | 40,863 | 41,570 | 42,175 | 42,809 | 397,658 |
| Rate | 366.3 | 383.9 | 365.1 | 311.8 | 294.6 | 233.7 | 235.7 | 234.1 | 290.2 | 331.5 | 303.0 |

## MEASLES

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 55 | 2,202 | 4,575 | 309 | 4,289 | 3,144 | 363 | 6,218 | 4,697 | 3,927 | |
| New Hampshire | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Vermont | 1,728 | 3,874 | 3,045 | 657 | 5,375 | 3,595 | 630 | 3,123 | 3,923 | 1,712 | |
| Massachusetts | 9,984 | 32,141 | 17,827 | 23,291 | 26,854 | 22,425 | 28,816 | 30,020 | 13,498 | 41,519 | |
| Rhode Island | 218 | 1,891 | 2,255 | 1,493 | 4,692 | 230 | 2,350 | 7,697 | 157 | 5,774 | |
| Connecticut | 5,884 | 8,526 | 4,617 | 8,558 | 9,660 | 4,626 | 5,544 | 17,078 | 2,491 | 9,996 | |
| Cases 5 States | 17,869 | 48,634 | 32,319 | 34,308 | 50,870 | 34,020 | 37,703 | 64,136 | 24,766 | 62,928 | 407,553 |
| Population 5 States | 6,914 | 7,006 | 7,122 | 7,221 | 7,329 | 7,444 | 7,534 | 7,638 | 7,727 | 7,820 | 73,755 |
| Rate | 258.4 | 694.2 | 453.8 | 475.1 | 694.1 | 457.0 | 500.4 | 839.7 | 320.5 | 804.7 | 552.6 |
| New York | 19,882 | 78,473 | 38,743 | 58,528 | 64,625 | 70,199 | 29,606 | 92,375 | 26,658 | 75,806 | |
| New Jersey | 4,774 | 27,642 | 7,195 | 22,661 | 27,789 | 15,787 | 10,746 | 45,913 | 2,396 | 31,764 | |
| Pennsylvania | 45,710 | 71,346 | 29,428 | 51,723 | 99,291 | 22,045 | 41,730 | 91,539 | 26,645 | 57,968 | |
| Cases 3 States | 70,366 | 177,461 | 75,366 | 132,912 | 191,705 | 108,031 | 82,082 | 229,827 | 55,699 | 165,538 | 1,288,987 |
| Population 3 States | 22,110 | 22,417 | 22,815 | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 236,828 |
| Rate | 318.3 | 791.6 | 330.3 | 574.6 | 815.9 | 452.1 | 338.7 | 934.3 | 223.7 | 656.2 | 544.3 |
| Ohio | 16,788 | 38,903 | 8,199 | 23,168 | 47,723 | 14,550 | 14,047 | 67,672 | 5,404 | 27,427 | |
| Indiana | 5,055 | 17,522 | 3,442 | 2,083 | 19,080 | 13,277 | 4,093 | 26,455 | 5,395 | 8,457 | |
| Illinois | 18,844 | 34,810 | 29,293 | 16,540 | 46,705 | 20,144 | 28,211 | 31,511 | 41,012 | 7,414 | |
| Michigan | 7,096 | 22,391 | 3,098 | 12,107 | 30,041 | 18,290 | 10,332 | 39,946 | 8,311 | 27,051 | |
| Wisconsin | 4,342 | 19,159 | 3,524 | 8,906 | 34,121 | 10,925 | 13,727 | 28,401 | 21,714 | 3,683 | |
| Cases 5 States | 52,125 | 132,785 | 47,556 | 62,804 | 177,670 | 77,186 | 70,410 | 193,985 | 81,836 | 74,032 | 970,389 |
| Population 5 States | 21,310 | 21,636 | 22,130 | 22,459 | 22,888 | 23,386 | 23,787 | 24,208 | 24,564 | 24,942 | 231,310 |
| Rate | 244.6 | 613.7 | 214.9 | 279.6 | 776.3 | 330.1 | 296.0 | 801.3 | 333.2 | 296.8 | 419.5 |
| Minnesota | 4,469 | 7,673 | 1,502 | 2,365 | 15,759 | 5,882 | 961 | 12,677 | 5,618 | 2,177 | |
| Iowa | 144 | 1,899 | 2,428 | 119 | 2,687 | 3,701 | 250 | 4,495 | 10,604 | 895 | |
| Missouri | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| North Dakota | 552 | 930 | 822 | 69 | 2,605 | 4,388 | 114 | 4,695 | 3,102 | 357 | |
| South Dakota | 157 | 3,620 | 982 | 229 | 2,941 | 6,604 | 90 | 2,117 | 4,656 | 1,306 | |
| Nebraska | 655 | 3,779 | 1,290 | 2,204 | 1,870 | 6,998 | 96 | 1,442 | 5,707 | 1,087 | |
| Kansas | 998 | 6,632 | 9,782 | 518 | 10,779 | 20,263 | 450 | 10,574 | 19,575 | 2,642 | |
| Cases 6 States | 6,975 | 24,533 | 16,806 | 5,504 | 36,641 | 47,836 | 1,961 | 36,000 | 49,262 | 8,464 | 233,982 |
| Population 6 States | 9,099 | 9,171 | 9,253 | 9,314 | 9,389 | 9,471 | 9,537 | 9,610 | 9,672 | 9,738 | 94,254 |
| Rate | 76.7 | 267.5 | 181.6 | 59.1 | 390.3 | 505.1 | 20.6 | 374.6 | 509.3 | 86.9 | 248.2 |
| Delaware | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Maryland | 3,709 | 9,627 | 4,388 | 7,382 | 15,531 | 5,907 | 3,267 | 20,664 | 1,607 | 17,333 | |
| District of Columbia | 187 | 582 | 4,157 | 503 | 7,510 | 425 | 793 | 6,434 | 164 | 3,576 | |
| Virginia | 4,823 | 8,881 | 17,115 | 4,838 | 47,843 | 16,897 | 6,516 | 16,433 | 18,832 | 20,460 | |
| West Virginia | 1,898 | 5,646 | 6,995 | 1,713 | 10,839 | 2,050 | 2,371 | 11,071 | 4,427 | 3,381 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina.......... | 5,768 | 3,621 | 11,539 | 2,042 | 52,066 | 34,938 | 1,002 | 7,952 | 32,882 | 60,543 | |
| South Carolina.......... | 359 | 657 | 1,739 | 37 | 1,935 | 4,256 | 275 | 800 | 7,818 | 18,921 | |
| Georgia................. | 1,256 | 2,018 | 1,924 | 170 | 7,836 | 3,622 | 548 | 3,030 | 3,661 | 4,781 | |
| Florida................. | 775 | 370 | 566 | 139 | 2,904 | 3,224 | 127 | 1,126 | 2,582 | 1,709 | |
| Cases 7 States.... | 18,775 | 31,402 | 48,423 | 16,824 | 146,464 | 71,319 | 14,899 | 67,510 | 71,973 | 130,704 | 618,293 |
| Population 7 States.... | 13,675 | 13,874 | 14,170 | 14,387 | 14,651 | 14,950 | 15,180 | 15,436 | 15,655 | 15,883 | 147,861 |
| Rate................ | 137.3 | 226.3 | 341.7 | 116.9 | 999.7 | 477.1 | 98.1 | 437.4 | 459.7 | 822.9 | 418.2 |
| Kentucky............... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Tennessee.............. | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Alabama................ | 1,106 | 769 | 526 | 185 | 19,673 | 12,240 | 666 | 5,099 | 6,026 | 8,850 | |
| Mississippi............ | 3,215 | 1,796 | 4,619 | 2,093 | 25,276 | 25,697 | 5,077 | 11,408 | 18,251 | 35,529 | |
| Cases 2 States.... | 4,321 | 2,565 | 5,145 | 2,278 | 44,949 | 37,937 | 5,743 | 16,507 | 24,277 | 44,379 | 188,101 |
| Population 2 States.... | 4,128 | 4,150 | 4,182 | 4,203 | 4,231 | 4,263 | 4,290 | 4,317 | 4,340 | 4,364 | 42,468 |
| Rate................ | 104.7 | 61.8 | 123.0 | 54.2 | 1,062.4 | 889.9 | 133.9 | 382.4 | 559.4 | 1,016.9 | 442.9 |
| Arkansas............... | 615 | 2,057 | 2,608 | 200 | 4,913 | 6,279 | 778 | 842 | 2,390 | 8,925 | |
| Louisiana.............. | 418 | 1,433 | 1,812 | 243 | 3,063 | 6,190 | 85 | 355 | 2,978 | 5,530 | |
| Oklahoma............... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Texas.................. | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 2 States.... | 1,033 | 3,490 | 4,420 | 443 | 7,976 | 12,469 | 863 | 1,197 | 5,368 | 14,455 | 51,714 |
| Population 2 States.... | 3,534 | 3,567 | 3,616 | 3,649 | 3,692 | 3,740 | 3,780 | 3,822 | 3,857 | 3,894 | 37,151 |
| Rate................ | 29.2 | 97.8 | 122.2 | 12.1 | 216.0 | 333.4 | 22.8 | 31.3 | 139.2 | 371.2 | 139.2 |
| Montana................ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Idaho.................. | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Wyoming................ | 646 | 977 | 857 | 33 | 1,266 | 2,454 | 129 | 401 | 3,001 | 639 | |
| Colorado............... | 146 | 4,684 | 3,556 | 267 | 6,860 | 9,482 | 276 | 1,573 | 13,849 | 2,871 | |
| New Mexico............. | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Arizona................ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Utah................... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nevada................. | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 2 States.... | 792 | 5,661 | 4,413 | 300 | 8,126 | 11,936 | 405 | 1,974 | 16,850 | 3,510 | 53,967 |
| Population 2 States.... | 1,124 | 1,144 | 1,172 | 1,192 | 1,217 | 1,246 | 1,269 | 1,295 | 1,315 | 1,337 | 12,311 |
| Rate................ | 70.5 | 494.8 | 376.5 | 25.2 | 667.7 | 957.9 | 31.9 | 152.4 | 1,281.4 | 262.5 | 438.4 |
| Washington............. | 1,894 | 10,063 | 2,641 | 386 | 8,344 | 21,372 | 347 | 2,965 | 11,848 | 5,651 | |
| Oregon................. | 407 | 2,386 | 3,316 | 109 | 5,355 | 5,242 | 190 | 2,141 | 5,040 | 2,267 | |
| California............. | 3,969 | 17,079 | 14,246 | 1,048 | 26,881 | 27,373 | 2,396 | 18,278 | 58,963 | 4,002 | |
| Cases 3 States.... | 6,270 | 29,528 | 20,203 | 1,543 | 40,580 | 53,987 | 2,933 | 23,384 | 75,851 | 11,920 | 266,199 |
| Population 3 States.... | 5,497 | 5,635 | 5,846 | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 62,730 |
| Rate................ | 114.1 | 524.0 | 345.6 | 25.8 | 657.7 | 845.9 | 44.8 | 347.4 | 1,101.7 | 169.2 | 424.4 |
| Cases 35 States... | 178,526 | 456,059 | 254,651 | 256,916 | 704,981 | 454,721 | 216,999 | 634,520 | 405,882 | 515,930 | 4,079,185 |
| Population 35 States... | 87,391 | 88,600 | 90,306 | 91,542 | 93,063 | 94,778 | 96,168 | 97,655 | 98,917 | 100,248 | 938,668 |
| Rate................ | 204.3 | 514.7 | 282.0 | 280.7 | 757.5 | 479.8 | 225.6 | 649.8 | 410.3 | 514.7 | 434.6 |

### MENINGOCOCCUS MENINGITIS

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 6 | ...... | 15 | 16 | 17 | 17 | 20 | ...... | 8 | 12 | |
| New Hampshire | ...... | 5 | 5 | 1 | 1 | ...... | 3 | ...... | ...... | ...... | |
| Vermont | 1 | ...... | 1 | ...... | ...... | ...... | 2 | 1 | ...... | ...... | |
| Massachusetts | 253 | 182 | 164 | 105 | 121 | 128 | 112 | 115 | 75 | 107 | |
| Rhode Island | 21 | 19 | 16 | 17 | 13 | 7 | 0 | 8 | 11 | 10 | |
| Connecticut | 44 | 92 | 79 | 91 | 83 | 47 | 35 | 36 | 37 | 56 | |
| Cases 3 States | 318 | 293 | 259 | 213 | 217 | 182 | 147 | 159 | 123 | 173 | 2,084 |
| Population 3 States | 5,795 | 5,885 | 5,997 | 6,093 | 6,198 | 6,309 | 6,395 | 6,496 | 6,582 | 6,673 | 62,423 |
| Rate | 5.5 | 5.0 | 4.3 | 3.5 | 3.5 | 2.9 | 2.3 | 2.4 | 1.9 | 2.6 | 3.3 |
| New York | 454 | 351 | 408 | 313 | 231 | 237 | 202 | 238 | 244 | 1,248 | |
| New Jersey | 149 | 134 | 107 | 114 | 118 | 115 | 79 | 85 | 82 | 180 | |
| Pennsylvania | 204 | 168 | 144 | 131 | 118 | ...... | ...... | ...... | 113 | 295 | |
| Cases 2 States | 603 | 485 | 515 | 427 | 349 | 352 | 281 | 323 | 326 | 1,428 | 5,089 |
| Population 2 States | 13,444 | 13,644 | 13,881 | 14,089 | 14,314 | 14,552 | 14,762 | 14,984 | 15,172 | 15,371 | 144,213 |
| Rate | 4.5 | 3.6 | 3.7 | 3.0 | 2.4 | 2.4 | 1.9 | 2.2 | 2.1 | 9.3 | 3.5 |
| Ohio | 142 | 166 | 126 | 72 | 65 | 57 | 77 | 66 | 101 | 240 | |
| Indiana | 42 | 42 | 55 | 35 | 51 | 40 | 30 | ...... | ...... | 32 | |
| Illinois | 175 | 217 | 219 | 178 | 130 | 81 | 106 | 114 | 296 | 456 | |
| Michigan | 75 | 171 | ...... | ...... | ...... | ...... | ...... | ...... | 139 | 276 | |
| Wisconsin | ...... | 115 | 81 | 82 | 75 | 58 | ...... | 81 | 325 | 222 | |
| Cases 2 States | 317 | 383 | 345 | 250 | 195 | 138 | 183 | 180 | 397 | 696 | 3,084 |
| Population 2 States | 12,150 | 12,336 | 12,618 | 12,806 | 13,050 | 13,334 | 13,562 | 13,803 | 14,006 | 14,222 | 131,887 |
| Rate | 2.6 | 3.1 | 2.7 | 2.0 | 1.5 | 1.0 | 1.3 | 1.3 | 2.8 | 4.9 | 2.3 |
| Minnesota | 56 | 53 | 70 | 48 | 35 | 32 | 34 | 39 | 150 | 128 | |
| Iowa | 32 | ...... | 40 | ...... | ...... | 15 | 16 | 19 | 35 | 46 | |
| Missouri | ...... | ...... | ...... | ...... | 86 | 43 | 31 | 44 | 90 | 300 | |
| North Dakota | 0 | ...... | 0 | 5 | ...... | ...... | ...... | ...... | 39 | 102 | |
| South Dakota | 9 | 42 | 38 | 16 | 27 | 7 | 6 | 10 | 12 | 21 | |
| Nebraska | 26 | 40 | 28 | 15 | 17 | 10 | 12 | 14 | 9 | 41 | |
| Kansas | 68 | 71 | 59 | 35 | 26 | 59 | 53 | 43 | 49 | 78 | |
| Cases 4 States | 159 | 206 | 195 | 114 | 105 | 108 | 105 | 106 | 220 | 268 | 1,586 |
| Population 4 States | 6,061 | 6,119 | 6,199 | 6,258 | 6,331 | 6,411 | 6,476 | 6,546 | 6,606 | 6,669 | 63,676 |
| Rate | 2.6 | 3.4 | 3.1 | 1.8 | 1.7 | 1.7 | 1.6 | 1.6 | 3.3 | 4.0 | 2.5 |
| Delaware | ...... | 0 | 8 | 4 | ...... | 13 | 2 | 0 | 4 | 16 | |
| Maryland | 77 | 41 | 22 | 52 | 43 | 28 | 41 | 34 | 22 | 19 | |
| District of Columbia | 13 | 5 | 8 | 1 | 8 | 2 | 4 | 6 | 4 | 8 | |
| Virginia | 110 | 131 | ...... | ...... | 135 | 85 | 71 | 65 | 48 | 49 | |
| West Virginia | 45 | 57 | 48 | 44 | 32 | 21 | 21 | 21 | 26 | 30 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 105 | 96 | ...... | ...... | 46 | 30 | 26 | 24 | 26 | 21 | |
| South Carolina | 32 | ...... | ...... | 13 | 15 | ...... | ...... | ...... | ...... | ...... | |
| Georgia | 58 | 51 | ...... | 29 | 18 | ...... | ...... | 23 | 23 | 29 | |
| Florida | 34 | 29 | 20 | 8 | ...... | ...... | 16 | 18 | 42 | 20 | |
| Cases 2 States | 135 | 103 | 78 | 97 | 83 | 51 | 66 | 61 | 52 | 783 | |
| Population 2 States | 3,325 | 3,376 | 3,453 | 3,505 | 3,571 | 3,649 | 3,712 | 3,777 | 3,833 | 3,892 | 36,093 |
| Rate | 4.1 | 3.1 | 2.3 | 2.8 | 2.3 | 1.4 | 1.8 | 1.6 | 1.4 | 1.5 | 2.2 |
| Kentucky | ...... | ...... | ...... | 61 | 47 | ...... | 26 | 27 | ...... | ...... | |
| Tennessee | ...... | ...... | 34 | 30 | 43 | 27 | 82 | 47 | 60 | 60 | |
| Alabama | 80 | ...... | ...... | ...... | 57 | 46 | 65 | 40 | 39 | 55 | |
| Mississippi | 51 | 45 | 18 | 15 | ...... | ...... | 11 | 15 | ...... | 17 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Arkansas | 28 | 40 | 16 | 8 | 20 | 10 | 26 | ...... | 10 | ...... | |
| Louisiana | 77 | 70 | 39 | 32 | 74 | 39 | 23 | 42 | 38 | 47 | |
| Oklahoma | ...... | ...... | 12 | 1 | 0 | ...... | ...... | ...... | 48 | 75 | |
| Texas | ...... | ...... | 23 | 38 | 12 | ...... | ...... | 22 | 19 | 33 | |
| Cases 1 State | 77 | 70 | 39 | 32 | 74 | 39 | 23 | 42 | 38 | 47 | 481 |
| Population 1 State | 1,791 | 1,806 | 1,827 | 1,842 | 1,861 | 1,882 | 1,900 | 1,919 | 1,934 | 1,950 | 18,712 |
| Rate | 4.3 | 3.9 | 2.1 | 1.7 | 4.0 | 2.1 | 1.2 | 2.2 | 2.0 | 2.4 | 2.6 |
| Montana | 14 | 19 | 12 | 23 | 30 | 17 | 12 | 42 | 165 | 178 | |
| Idaho | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 74 | 46 | 99 | |
| Wyoming | 4 | 19 | ...... | 2 | 2 | 0 | 8 | 11 | 29 | 85 | |
| Colorado | 0 | 5 | 11 | 10 | ...... | ...... | ...... | 10 | ...... | 224 | |
| New Mexico | ...... | 8 | 7 | 4 | ...... | 4 | 1 | 5 | ...... | 7 | |
| Arizona | ...... | 3 | 1 | ...... | 1 | ...... | 3 | 4 | 11 | 76 | |
| Utah | 9 | ...... | 14 | ...... | 6 | ...... | 54 | 26 | 40 | 197 | |
| Nevada | ...... | ...... | ...... | 1 | ...... | 4 | 6 | 4 | 5 | 17 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Washington | 28 | ...... | 15 | 17 | 22 | 23 | 61 | 241 | 198 | 146 | |
| Oregon | 16 | 12 | 8 | 16 | 7 | 5 | 86 | 99 | 89 | 76 | |
| California | 104 | 188 | 171 | 117 | 118 | 109 | 110 | 208 | 260 | 259 | |
| Cases 2 States | 120 | 200 | 179 | 133 | 125 | 114 | 196 | 307 | 349 | 335 | 2,058 |
| Population 2 States | 4,151 | 4,268 | 4,446 | 4,564 | 4,719 | 4,898 | 5,043 | 5,193 | 5,323 | 5,458 | 48,063 |
| Rate | 2.9 | 4.7 | 4.0 | 2.9 | 2.6 | 2.3 | 3.9 | 5.9 | 6.6 | 6.1 | 4.3 |
| Cases 16 States | 1,729 | 1,740 | 1,610 | 1,266 | 1,148 | 984 | 1,001 | 1,178 | 1,505 | 3,004 | 15,165 |
| Population 16 States | 46,717 | 47,434 | 48,421 | 49,157 | 50,044 | 51,035 | 51,850 | 52,718 | 53,456 | 54,235 | 505,067 |
| Rate | 3.7 | 3.7 | 3.3 | 2.6 | 2.3 | 1.9 | 1.9 | 2.2 | 2.8 | 5.5 | 3.0 |

### MUMPS

Cases Reported Annually by State Health Officers for the Years 1922–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | ...... | ...... | ...... | 68 | 197 | 1,955 | 3,239 | 947 | 538 | 1,409 | |
| New Hampshire | ...... | ...... | ...... | 69 | 136 | 95 | 165 | 308 | 228 | 358 | |
| Vermont | ...... | ...... | ...... | 450 | 673 | 778 | 2,030 | 839 | 1,823 | 1,598 | |
| Massachusetts | ...... | ...... | ...... | 4,358 | 7,707 | 9,431 | 2,674 | 5,117 | 10,752 | 7,215 | |
| Rhode Island | ...... | ...... | ...... | 121 | 77 | 304 | 81 | 105 | 381 | 739 | |
| Connecticut | ...... | ...... | ...... | 803 | 1,327 | 3,549 | 1,094 | 435 | 1,532 | 4,600 | |
| Cases 6 States | ...... | ...... | ...... | 5,869 | 10,117 | 16,112 | 9,283 | 7,751 | 15,254 | 15,919 | 80,305 |
| Population 6 States | ...... | ...... | ...... | 7,668 | 7,778 | 7,894 | 7,986 | 8,092 | 8,182 | 8,276 | 55,876 |
| Rate | ...... | ...... | ...... | 76.5 | 130.1 | 204.1 | 116.2 | 95.8 | 186.4 | 192.4 | 143.7 |
| New York | ...... | ...... | ...... | 11,065 | 11,891 | 15,318 | 8,802 | 9,069 | 23,531 | 16,456 | |
| New Jersey | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Pennsylvania | ...... | ...... | ...... | 7,235 | 6,130 | 21,770 | 14,731 | 4,528 | 15,545 | 24,563 | |
| Cases 2 States | ...... | ...... | ...... | 18,300 | 18,021 | 37,088 | 23,533 | 13,597 | 39,076 | 41,019 | 190,634 |
| Population 2 States | ...... | ...... | ...... | 19,786 | 20,069 | 20,374 | 20,638 | 20,918 | 21,153 | 21,404 | 144,342 |
| Rate | ...... | ...... | ...... | 925 | 898 | 182.0 | 114.0 | 65.0 | 185.0 | 191.6 | 132.1 |
| Ohio | ...... | ...... | ...... | 1,939 | 1,705 | 12,267 | 3,777 | 1,980 | 6,023 | 9,037 | |
| Indiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Illinois | ...... | ...... | ...... | 4,874 | 6,834 | 11,369 | 7,076 | 3,524 | 13,583 | 8,093 | |
| Michigan | ...... | ...... | ...... | 2,106 | 2,107 | 7,895 | 2,433 | 1,293 | 6,816 | 9,467 | |
| Wisconsin | ...... | ...... | ...... | 316 | 314 | 1,940 | 8,240 | 5,286 | 7,690 | 5,448 | |
| Cases 4 States | ...... | ...... | ...... | 9,235 | 10,960 | 33,471 | 21,526 | 12,083 | 34,112 | 32,045 | 153,432 |
| Population 4 States | ...... | ...... | ...... | 19,459 | 19,857 | 20,320 | 20,692 | 21,084 | 21,414 | 21,766 | 144,592 |
| Rate | ...... | ...... | ...... | 47.5 | 55.2 | 164.7 | 104.0 | 57.3 | 159.3 | 147.2 | 106.1 |
| Minnesota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Iowa | ...... | ...... | ...... | 159 | 790 | 1,048 | 547 | 866 | 985 | 2,197 | |
| Missouri | ...... | ...... | ...... | 363 | 831 | 3,704 | 1,922 | 1,112 | 2,761 | 4,166 | |
| North Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| South Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nebraska | ...... | ...... | ...... | 799 | 642 | 189 | 345 | 311 | 1,426 | 1,262 | |
| Kansas | ...... | ...... | ...... | 721 | 2,440 | 7,483 | 7,578 | 852 | 1,418 | 3,488 | |
| Cases 4 States | ...... | ...... | ...... | 2,042 | 4,703 | 12,424 | 10,392 | 3,141 | 6,590 | 11,113 | 50,405 |
| Population 4 States | ...... | ...... | ...... | 8,968 | 9,009 | 9,053 | 9,088 | 9,127 | 9,159 | 9,194 | 63,598 |
| Rate | ...... | ...... | ...... | 22.8 | 52.2 | 137.2 | 114.3 | 34.4 | 72.0 | 120.9 | 79.3 |
| Delaware | ...... | ...... | ...... | 11 | 12 | 188 | 102 | 6 | 114 | 216 | |
| Maryland | ...... | ...... | ...... | 3,503 | 1,643 | 1,075 | 2,580 | 4,640 | 864 | 1,650 | |
| District of Columbia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| West Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| South Carolina | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Georgia | ...... | ...... | ...... | 142 | 220 | 861 | 1,905 | 1,100 | 932 | 543 | |
| Florida | ...... | ...... | ...... | 21 | 40 | 571 | 1,475 | 688 | 338 | 382 | |
| Cases 4 States | ...... | ...... | ...... | 3,677 | 1,915 | 2,695 | 6,062 | 6,434 | 2,248 | 2,791 | 25,822 |
| Population 4 States | ...... | ...... | ...... | 5,821 | 5,940 | 6,070 | 6,164 | 6,276 | 6,374 | 6,474 | 43,119 |
| Rate | ...... | ...... | ...... | 63.2 | 32.2 | 44.4 | 98.3 | 102.5 | 35.3 | 43.1 | 59.9 |
| Kentucky | ...... | ...... | ...... | 63 | 120 | 562 | 183 | 98 | 366 | 450 | |
| Tennessee | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Alabama | ...... | ...... | ...... | 137 | 261 | 1,967 | 1,709 | 1,675 | 925 | 902 | |
| Mississippi | ...... | ...... | ...... | 592 | 1,147 | 8,100 | 14,517 | 9,131 | 5,280 | 8,170 | |
| Cases 3 States | ...... | ...... | ...... | 792 | 1,528 | 10,629 | 16,409 | 10,904 | 6,571 | 9,522 | 56,355 |
| Population 3 States | ...... | ...... | ...... | 6,658 | 6,703 | 6,755 | 6,798 | 6,841 | 6,878 | 6,917 | 47,550 |
| Rate | ...... | ...... | ...... | 11.9 | 22.8 | 157.4 | 241.4 | 159.4 | 95.5 | 137.7 | 118.5 |
| Arkansas | ...... | ...... | ...... | 13 | 313 | 841 | 990 | 648 | 1,462 | 1,270 | |
| Louisiana | ...... | ...... | ...... | 24 | 48 | 31 | 29 | 224 | 376 | 118 | |
| Oklahoma | ...... | ...... | ...... | 4 | 106 | 80 | 775 | 283 | 489 | 728 | |
| Texas | ...... | ...... | ...... | 461 | 729 | 2,961 | 2,412 | 1,095 | 873 | 1,105 | |
| Cases 4 States | ...... | ...... | ...... | 502 | 1,196 | 3,913 | 4,206 | 2,250 | 3,200 | 3,221 | 18,488 |
| Population 4 States | ...... | ...... | ...... | 10,687 | 10,882 | 11,105 | 11,286 | 11,477 | 11,638 | 11,807 | 78,882 |
| Rate | ...... | ...... | ...... | 4.70 | 11.0 | 35.2 | 37.3 | 19.60 | 27.5 | 27.3 | 23.4 |
| Montana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Idaho | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Wyoming | ...... | ...... | ...... | 79 | 34 | 277 | 207 | 158 | 398 | 232 | |
| Colorado | ...... | ...... | ...... | 708 | 1,213 | 2,090 | 2,335 | 170 | 490 | 2,533 | |
| New Mexico | ...... | ...... | ...... | 147 | 159 | 311 | 350 | 333 | 703 | 258 | |
| Arizona | ...... | ...... | ...... | 16 | 175 | 280 | 523 | 187 | 141 | 295 | |
| Utah | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nevada | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases 4 States | ...... | ...... | ...... | 950 | 1,581 | 2,958 | 3,415 | 848 | 1,732 | 3,318 | 14,802 |
| Population 4 States | ...... | ...... | ...... | 1,936 | 1,983 | 2,037 | 2,081 | 2,128 | 2,166 | 2,207 | 14,538 |
| Rate | ...... | ...... | ...... | 49.1 | 79.7 | 145.2 | 164.1 | 39.8 | 80.0 | 150.3 | 101.8 |
| Washington | ...... | ...... | ...... | 1,735 | 906 | 1,502 | 3,609 | 2,825 | 3,069 | 2,723 | |
| Oregon | ...... | ...... | ...... | 231 | 129 | 236 | 1,090 | 1,325 | 775 | 724 | |
| California | ...... | ...... | ...... | 2,506 | 1,014 | 2,810 | 9,990 | 10,266 | 7,683 | 10,277 | |
| Cases 3 States | ...... | ...... | ...... | 4,472 | 2,049 | 4,548 | 14,689 | 14,416 | 11,527 | 13,724 | 65,425 |
| Population 3 States | ...... | ...... | ...... | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 45,752 |
| Rate | ...... | ...... | ...... | 74.7 | 33.2 | 71.3 | 224.2 | 214.2 | 167.4 | 194.8 | 143.0 |
| **Cases 34 States** | ...... | ...... | ...... | 45,839 | 52,071 | 123,838 | 109,515 | 71,424 | 120,310 | 132,672 | 655,668 |
| **Population 34 States** | ...... | ...... | ...... | 86,969 | 88,391 | 89,990 | 91,286 | 92,674 | 93,849 | 95,090 | 638,249 |
| **Rate** | ...... | ...... | ...... | 52.7 | 58.9 | 137.6 | 120.0 | 77.1 | 128.2 | 139.5 | 102.7 |

## PNEUMONIA (ALL FORMS)

Cases Reported Annually by State Health Officers for the Years 1919–1928

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 67 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1,521 | 969 | |
| New Hampshire | ...... | 252 | 25 | 57 | 14 | ...... | ...... | ...... | ...... | ..... | |
| Vermont | 177 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Massachusetts | *4,585 | *5,558 | *4,080 | *5,194 | *4,759 | *4,552 | *5,544 | *5,134 | *4,279 | *4,785 | |
| Rhode Island | ...... | ...... | ...... | 40 | 84 | 56 | ...... | 143 | ...... | ...... | |
| Connecticut | *545 | *1,545 | *1,060 | *1,655 | *1,373 | *1,283 | 3,035 | 3,847 | 2,887 | 3,324 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| New York | 16,483 | 46,420 | 24,052 | 31,918 | 29,012 | 29,526 | 27,671 | 36,626 | 29,500 | 35,630 | |
| New Jersey | 7,017 | 9,401 | 5,431 | 6,782 | 6,277 | 6,060 | 5,604 | 7,308 | 5,077 | 6,513 | |
| Pennsylvania | ...... | ...... | ...... | *5,460 | *6,176 | *5,813 | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Ohio | 5,251 | 6,354 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Indiana | 2,261 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Illinois | 8,995 | 18,074 | 9,231 | 15,189 | 18,280 | 14,217 | 15,215 | 17,631 | 13,202 | 19,139 | |
| Michigan | 1,965 | 8,496 | 4,803 | 6,948 | 7,139 | 4,664 | 5,708 | 6,822 | 5,137 | 7,562 | |
| Wisconsin | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Minnesota | 1,425 | 1,652 | ...... | 1,932 | 2,197 | 1,913 | 2,039 | 2,038 | 1,847 | 1,956 | |
| Iowa | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Missouri | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| North Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1,025 | |
| South Dakota | 874 | 926 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nebraska | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Kansas | 1,081 | ...... | ...... | 1,709 | 1,974 | 1,890 | 1,927 | 2,404 | 1,652 | 2,127 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Delaware | ...... | ...... | ...... | ...... | 305 | 263 | 362 | ...... | ...... | ...... | |
| Maryland | 3,643 | 6,178 | 3,851 | 4,377 | 6,051 | 4,184 | 4,310 | 5,471 | 3,700 | 4,079 | |
| District of Columbia | ...... | ...... | ...... | ...... | ...... | ...... | 1,269 | 1,996 | 1,125 | 1,339 | |
| Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| West Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 1,788 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| South Carolina | 369 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 5,092 | |
| Georgia | 1,218 | ...... | ...... | ...... | ...... | ...... | 2,755 | 2,715 | 1,619 | ...... | |
| Florida | 519 | 1,570 | ...... | ...... | 810 | 1,093 | 1,148 | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Kentucky | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Tennessee | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3,185 | ...... | 2,758 | |
| Alabama | 2,270 | ...... | ...... | ...... | 3,583 | 4,103 | 4,238 | 4,414 | 2,845 | 4,790 | |
| Mississippi | 15,261 | 14,073 | 8,577 | 11,013 | 11,624 | 14,286 | 15,962 | 18,922 | 10,874 | 18,232 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Arkansas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Louisiana | 1,187 | ...... | ...... | 1,915 | 2,699 | 3,328 | 2,991 | 2,958 | 2,120 | 3,146 | |
| Oklahoma | ...... | ...... | ...... | ...... | 5,223 | ...... | 3,715 | 4,051 | 2,422 | 4,464 | |
| Texas | ...... | ...... | ...... | 1,044 | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | .... | ...... | ...... | ...... | ...... |
| Montana | ...... | ...... | 147 | 116 | 128 | 83 | ...... | ...... | ...... | ...... | |
| Idaho | ...... | ...... | ...... | ...... | ...... | 25 | ...... | 136 | ...... | ...... | |
| Wyoming | ...... | 281 | ...... | 319 | ...... | ...... | ...... | ...... | ...... | 261 | |
| Colorado | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| New Mexico | ...... | 550 | ...... | ...... | ...... | ...... | 325 | 429 | 291 | 417 | |
| Arizona | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Utah | 816 | ...... | 1,410 | ...... | 1,012 | ...... | 942 | 1,372 | 880 | 1,326 | |
| Nevada | ...... | ...... | 117 | 177 | 110 | 131 | ...... | 102 | 129 | 244 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Washington | †1,040 | 1,674 | ...... | ...... | ...... | ...... | ...... | ...... | 993 | 1,018 | |
| Oregon | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 940 | 813 | 1,199 | |
| California | 1,987 | ...... | 3,812 | 5,515 | *4,223 | *3,658 | *3,187 | *3,141 | *3,209 | *3,895 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |

* Lobar only.

† Seattle not included.

### POLIOMYELITIS

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 4 | 34 | 26 | 23 | 14 | 139 | 29 | 16 | 135 | 49 | |
| New Hampshire | ...... | 16 | 12 | 12 | 6 | 40 | 21 | 6 | 51 | 21 | |
| Vermont | 15 | 6 | 63 | 24 | 43 | 13 | 81 | 21 | 36 | 49 | |
| Massachusetts | 66 | 696 | 233 | 217 | 223 | 277 | 167 | 245 | 1,189 | 434 | |
| Rhode Island | 2 | 18 | 5 | 105 | 7 | 18 | 37 | 12 | 65 | 15 | |
| Connecticut | 12 | 41 | 86 | 47 | 88 | 120 | 50 | 33 | 188 | 70 | |
| Cases 5 States | 99 | 795 | 413 | 416 | 375 | 567 | 364 | 327 | 1,613 | 617 | 5,586 |
| Population 5 States | 6,914 | 7,006 | 7,122 | 7,221 | 7,329 | 7,444 | 7,534 | 7,638 | 7,727 | 7,820 | 73,755 |
| Rate | 1.4 | 11.3 | 5.8 | 5.8 | 5.1 | 7.6 | 4.8 | 4.3 | 20.9 | 7.9 | 7.6 |
| New York | 146 | 214 | 1,149 | 610 | 943 | 1,210 | 793 | 674 | 916 | 1,021 | |
| New Jersey | 44 | 51 | 170 | 115 | 211 | 86 | 166 | 58 | 332 | 82 | |
| Pennsylvania | 106 | 144 | 244 | 91 | 175 | 166 | 183 | 100 | 477 | 218 | |
| Cases 3 States | 296 | 409 | 1,563 | 816 | 1,329 | 1,462 | 1,142 | 832 | 1,725 | 1,321 | 10,895 |
| Population 3 States | 22,110 | 22,417 | 22,815 | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 236,828 |
| Rate | 1.3 | 1.8 | 6.9 | 3.5 | 5.7 | 6.1 | 4.7 | 3.4 | 6.9 | 5.2 | 4.6 |
| Ohio | 98 | 68 | 288 | 63 | 82 | 157 | 227 | 140 | 1,170 | 291 | |
| Indiana | 32 | 29 | 80 | ...... | 27 | 78 | 58 | 37 | 153 | 34 | |
| Illinois | 273 | 287 | 678 | 134 | 217 | 257 | 262 | 127 | 480 | 106 | |
| Michigan | 105 | 61 | 480 | 43 | 39 | 647 | 99 | 107 | 284 | 77 | |
| Wisconsin | 226 | 84 | 259 | 81 | 54 | 68 | 313 | 44 | 177 | 55 | |
| Cases 4 States | 702 | 500 | 1,705 | 321 | 392 | 1,129 | 901 | 418 | 2,111 | 529 | 8,708 |
| Population 4 States | 18,391 | 18,694 | 19,153 | 19,459 | 19,857 | 20,320 | 20,692 | 21,084 | 21,414 | 21,766 | 200,830 |
| Rate | 3.8 | 2.7 | 8.9 | 1.6 | 2.0 | 5.6 | 4.4 | 2.0 | 9.9 | 2.4 | 4.3 |
| Minnesota | 85 | 80 | 706 | 51 | 81 | 144 | 929 | 44 | 140 | 224 | |
| Iowa | 13 | 32 | 170 | 21 | ...... | 65 | 179 | 19 | 109 | 37 | |
| Missouri | ...... | ...... | ...... | ...... | 53 | 28 | 122 | ...... | 273 | 33 | |
| North Dakota | ...... | 9 | 44 | 16 | 23 | 72 | 154 | 24 | 27 | 138 | |
| South Dakota | 14 | 13 | 37 | 16 | 25 | 38 | 44 | 19 | 76 | 49 | |
| Nebraska | 34 | 13 | 64 | 24 | 107 | 14 | 125 | 20 | 115 | 41 | |
| Kansas | 61 | 26 | 81 | 21 | 148 | 27 | 122 | 66 | 196 | 40 | |
| Cases 4 States | 194 | 132 | 888 | 112 | 361 | 223 | 1,220 | 149 | 527 | 354 | 4,160 |
| Population 4 States | 6,061 | 6,119 | 6,199 | 6,258 | 6,331 | 6,411 | 6,476 | 6,546 | 6,606 | 6,669 | 63,676 |
| Rate | 3.2 | 2.2 | 14.3 | 1.8 | 5.7 | 3.5 | 18.8 | 2.3 | 8.0 | 5.3 | 6.5 |
| Delaware | ...... | 1 | 3 | 2 | ...... | ...... | 4 | 11 | 4 | 10 | |
| Maryland | 111 | 47 | 221 | 39 | 27 | 192 | 50 | 46 | 31 | 289 | |
| District of Columbia | 11 | 3 | 40 | 5 | 19 | 23 | 22 | 6 | 14 | 36 | |
| Virginia | 143 | 76 | 131 | 78 | 147 | 127 | 94 | 67 | 72 | 97 | |
| West Virginia | 61 | 16 | 43 | 12 | 24 | 24 | 17 | ...... | 229 | 190 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 43 | 24 | 36 | 30 | 15 | ...... | 79 | 112 | 24 | 51 | |
| South Carolina | 2 | ...... | ...... | ...... | ...... | 11 | ...... | ...... | 99 | 68 | |
| Georgia | 23 | 23 | 15 | 16 | 4 | ...... | ...... | 13 | 21 | ...... | |
| Florida | 6 | 6 | 8 | 16 | 14 | 7 | 59 | 16 | 39 | 23 | |
| Cases 3 States | 271 | 132 | 400 | 138 | 207 | 349 | 225 | 135 | 156 | 445 | 2,458 |
| Population 3 States | 5,127 | 5,219 | 5,354 | 5,464 | 5,589 | 5,726 | 5,824 | 5,944 | 6,046 | 6,154 | 56,447 |
| Rate | 5.3 | 2.5 | 7.5 | 2.5 | 3.7 | 6.1 | 3.9 | 2.3 | 2.6 | 7.2 | 4.4 |
| Kentucky | ...... | ...... | ...... | ...... | 21 | ...... | 82 | ...... | 195 | 59 | |
| Tennessee | ...... | ...... | 16 | 21 | ...... | ...... | ...... | 30 | 91 | 46 | |
| Alabama | 35 | ...... | ...... | 33 | 24 | 26 | 75 | 37 | 30 | 61 | |
| Mississippi | 76 | 66 | 49 | 21 | 43 | 25 | 47 | 49 | 56 | 59 | |
| Cases 1 State | 76 | 66 | 49 | 21 | 43 | 25 | 47 | 49 | 56 | 59 | 491 |
| Population 1 State | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 1,791 | 17,910 |
| Rate | 4.2 | 3.7 | 2.7 | 1.2 | 2.4 | 1.4 | 2.6 | 2.7 | 3.1 | 3.3 | 2.7 |
| Arkansas | 12 | ...... | 30 | ...... | 18 | ...... | 10 | ...... | 61 | ...... | |
| Louisiana | 31 | 12 | 17 | 35 | 30 | 19 | 31 | 21 | 73 | 21 | |
| Oklahoma | ...... | ...... | ...... | ...... | ...... | ...... | 38 | 32 | 157 | 38 | |
| Texas | ...... | ...... | ...... | 37 | ...... | ...... | 50 | ...... | 266 | ...... | |
| Cases 1 State | 31 | 12 | 17 | 35 | 30 | 19 | 31 | 21 | 73 | 21 | 290 |
| Population 1 State | 1,791 | 1,806 | 1,827 | 1,842 | 1,861 | 1,882 | 1,900 | 1,919 | 1,934 | 1,950 | 18,712 |
| Rate | 1.7 | 0.7 | 0.9 | 1.9 | 1.6 | 1.0 | 1.6 | 1.1 | 3.8 | 1.1 | 1.5 |
| Montana | 9 | 25 | 26 | 47 | 16 | 183 | 41 | 12 | 22 | 65 | |
| Idaho | ...... | ...... | 38 | ...... | ...... | 11 | 10 | 7 | 39 | 47 | |
| Wyoming | 2 | 3 | 3 | 8 | 4 | ...... | 10 | 4 | 12 | 5 | |
| Colorado | ...... | 10 | ...... | 12 | 8 | 8 | ...... | 12 | 77 | 76 | |
| New Mexico | ...... | 3 | 6 | 7 | 2 | 6 | 12 | 8 | 200 | 19 | |
| Arizona | ...... | ...... | 2 | ...... | 3 | 3 | 37 | 3 | 72 | ...... | |
| Utah | 7 | ...... | 9 | ...... | 2 | ...... | 11 | ...... | 88 | 23 | |
| Nevada | ...... | ...... | 2 | 3 | ...... | 17 | 27 | ...... | 13 | 9 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Washington | 16 | 10 | 336 | 18 | 22 | 592 | 115 | 16 | 292 | 343 | |
| Oregon | 2 | 6 | 78 | 5 | 7 | 69 | 23 | 19 | 390 | 84 | |
| California | 27 | 72 | 282 | 63 | 250 | 192 | 821 | 187 | 1,277 | 298 | |
| Cases 3 States | 45 | 88 | 696 | 86 | 279 | 853 | 959 | 222 | 1,959 | 725 | 5,912 |
| Population 3 States | 5,497 | 5,635 | 5,846 | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 62,730 |
| Rate | 0.8 | 1.6 | 11.9 | 1.4 | 4.5 | 13.4 | 14.6 | 3.3 | 28.5 | 10.3 | 9.4 |
| Cases 24 States | 1,714 | 2,134 | 5,731 | 1,945 | 3,016 | 4,627 | 4,889 | 2,153 | 8,220 | 4,071 | 38,500 |
| Population 24 States | 67,682 | 68,687 | 70,107 | 71,152 | 72,424 | 73,852 | 75,008 | 76,251 | 77,305 | 78,420 | 730,888 |
| Rate | 2.5 | 3.1 | 8.2 | 2.7 | 4.2 | 6.3 | 6.5 | 2.8 | 10.6 | 5.2 | 5.3 |

## SCARLET FEVER

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 879 | 1,039 | 1,346 | 1,458 | 1,144 | 1,305 | 1,054 | 1,318 | 1,550 | 1,165 | |
| New Hampshire | ...... | 597 | 609 | 370 | 331 | 1,051 | 1,181 | 822 | 520 | 591 | |
| Vermont | 438 | 661 | 1,447 | 1,391 | 656 | 680 | 737 | 456 | 484 | 581 | |
| Massachusetts | 8,019 | 10,260 | 8,331 | 7,868 | 12,300 | 14,410 | 10,319 | 11,323 | 16,546 | 10,473 | |
| Rhode Island | 792 | 876 | 873 | 448 | 826 | 2,584 | 825 | 496 | 1,197 | 1,475 | |
| Connecticut | 2,663 | 4,028 | 4,001 | 3,132 | 3,372 | 5,658 | 4,005 | 3,062 | 3,319 | 2,730 | |
| Cases 5 States | 12,791 | 16,864 | 15,998 | 14,297 | 18,298 | 24,637 | 16,940 | 16,655 | 23,096 | 16,424 | 176,000 |
| Population 5 States | 6,914 | 7,006 | 7,122 | 7,221 | 7,329 | 7,444 | 7,534 | 7,638 | 7,727 | 7,820 | 73,755 |
| Rate | 185.0 | 240.7 | 224.6 | 198.0 | 249.7 | 331.0 | 224.8 | 218.1 | 299.0 | 210.0 | 238.6 |
| New York | 12,075 | 15,188 | 25,663 | 21,521 | 20,539 | 21,586 | 19,488 | 16,437 | 29,196 | 21,598 | |
| New Jersey | 4,240 | 4,782 | 9,228 | 9,066 | 5,903 | 6,461 | 8,603 | 7,271 | 10,041 | 7,459 | |
| Pennsylvania | 11,336 | 21,027 | 24,065 | 16,597 | 15,057 | 18,458 | 21,380 | 20,337 | 20,614 | 17,530 | |
| Cases 3 States | 27,651 | 40,997 | 58,956 | 47,184 | 41,499 | 46,505 | 49,471 | 44,045 | 59,851 | 46,587 | 462,746 |
| Population 3 States | 22,110 | 22,417 | 22,815 | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 236,828 |
| Rate | 125.1 | 182.9 | 258.4 | 204.0 | 176.6 | 194.6 | 204.1 | 179.1 | 240.3 | 184.7 | 195.4 |
| Ohio | 8,017 | 16,211 | 14,312 | 13,146 | 16,604 | 13,691 | 15,328 | 14,076 | 14,357 | 10,174 | |
| Indiana | 4,105 | 7,435 | 7,698 | 3,501 | 3,466 | 4,323 | 7,157 | 6,875 | 6,933 | 4,103 | |
| Illinois | 7,334 | 18,084 | 19,023 | 12,268 | 9,463 | 11,702 | 15,688 | 14,243 | 11,787 | 12,354 | |
| Michigan | 5,398 | 10,266 | 10,917 | 9,687 | 12,868 | 12,995 | 12,303 | 12,689 | 10,986 | 10,486 | |
| Wisconsin | 3,776 | 5,822 | 7,787 | 5,708 | 12,623 | 8,598 | 5,862 | 5,781 | 6,751 | 7,075 | |
| Cases 5 States | 28,630 | 57,818 | 59,737 | 44,310 | 55,024 | 51,309 | 56,338 | 53,664 | 50,814 | 44,192 | 501,836 |
| Population 5 States | 21,310 | 21,636 | 22,130 | 22,459 | 22,888 | 23,386 | 23,787 | 24,208 | 24,564 | 24,942 | 231,310 |
| Rate | 134.4 | 267.2 | 269.9 | 197.3 | 240.4 | 219.4 | 236.8 | 221.7 | 206.9 | 177.2 | 217.0 |
| Minnesota | 2,657 | 3,329 | 6,588 | 7,696 | 9,892 | 10,116 | 9,574 | 13,128 | 8,008 | 5,619 | |
| Iowa | 1,661 | 2,832 | 4,335 | 2,874 | 3,708 | 1,892 | 1,556 | 2,124 | 2,318 | 2,955 | |
| Missouri | ...... | ...... | ...... | 2,991 | 4,307 | 6,628 | 8,459 | 7,732 | 4,821 | 4,162 | |
| North Dakota | 800 | 1,232 | 1,040 | 1,021 | 1,471 | 1,779 | 2,083 | 2,904 | 2,235 | 1,714 | |
| South Dakota | 1,063 | 2,062 | 1,489 | 1,577 | 1,882 | 2,298 | 2,245 | 3,463 | 2,344 | 1,543 | |
| Nebraska | 757 | 2,058 | 2,470 | 2,272 | 1,598 | 962 | 854 | 2,135 | 2,006 | 3,036 | |
| Kansas | 2,791 | 5,091 | 6,535 | 4,657 | 3,639 | 3,348 | 3,369 | 3,198 | 5,114 | 5,497 | |
| Cases 6 States | 9,729 | 16,604 | 22,457 | 20,097 | 22,190 | 20,395 | 19,681 | 26,952 | 22,025 | 20,364 | 200,494 |
| Population 6 States | 9,099 | 9,171 | 9,253 | 9,314 | 9,389 | 9,471 | 9,537 | 9,610 | 9,672 | 9,738 | 94,254 |
| Rate | 106.9 | 181.0 | 242.7 | 215.8 | 236.3 | 215.3 | 206.4 | 280.5 | 227.7 | 209.1 | 212.7 |
| Delaware | ...... | 317 | 638 | 1,683 | 547 | 399 | 155 | 453 | 627 | 150 | |
| Maryland | 5,507 | 2,636 | 2,559 | 2,874 | 3,822 | 3,855 | 2,505 | 2,206 | 2,465 | 2,469 | |
| District of Columbia | 665 | 782 | 853 | 478 | 998 | 1,260 | 1,011 | 855 | 944 | 1,288 | |
| Virginia | 1,872 | 2,188 | 3,096 | 3,197 | 3,046 | 2,478 | 2,500 | 3,722 | 2,668 | 2,853 | |
| West Virginia | 2,223 | 2,073 | 2,632 | 1,851 | 2,126 | 1,745 | 2,011 | 2,110 | 2,367 | 2,105 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 1,512 | 1,663 | 2,585 | 3,153 | 2,418 | 2,255 | 1,856 | 2,281 | 2,638 | 2,828 | |
| South Carolina | 175 | 143 | 318 | 241 | 186 | 95 | 409 | 582 | 766 | 561 | |
| Georgia | 708 | 759 | 754 | 644 | 394 | 407 | 328 | 535 | 979 | 1,000 | |
| Florida | 146 | 163 | 172 | 105 | 91 | 152 | 179 | 459 | 501 | 376 | |
| Cases 7 States | 12,808 | 10,407 | 12,969 | 12,543 | 13,081 | 12,247 | 10,799 | 12,750 | 13,328 | 13,480 | 124,412 |
| Population 7 States | 13,675 | 13,874 | 14,170 | 14,387 | 14,651 | 14,950 | 15,180 | 15,436 | 15,655 | 15,883 | 147,861 |
| Rate | 93.7 | 75.0 | 91.5 | 87.2 | 89.3 | 81.9 | 71.1 | 82.6 | 85.1 | 84.9 | 84.1 |
| Kentucky | ...... | ...... | ...... | 875 | 690 | 736 | 1,309 | 1,274 | 1,678 | 2,508 | |
| Tennessee | ...... | ...... | 1,275 | 1,079 | 631 | 905 | 1,391 | 2,021 | 3,106 | 1,554 | |
| Alabama | 647 | 690 | 746 | 545 | 797 | 666 | 1,196 | 867 | 991 | 1,046 | |
| Mississippi | 1,256 | 1,610 | 994 | 482 | 428 | 474 | 459 | 736 | 1,017 | 923 | |
| Cases 2 States | 1,903 | 2,300 | 1,740 | 1,027 | 1,225 | 1,140 | 1,655 | 1,603 | 2,008 | 1,969 | 16,570 |
| Population 2 States | 4,128 | 4,150 | 4,182 | 4,203 | 4,231 | 4,263 | 4,290 | 4,317 | 4,340 | 4,364 | 42,468 |
| Rate | 46.1 | 55.4 | 41.6 | 24.4 | 29.0 | 26.7 | 38.6 | 37.1 | 46.3 | 45.1 | 39.0 |
| Arkansas | 628 | 704 | 566 | 270 | 270 | 309 | 368 | 480 | 476 | 950 | |
| Louisiana | 257 | 372 | 389 | 336 | 265 | 388 | 598 | 685 | 478 | 575 | |
| Oklahoma | ...... | ...... | 539 | 292 | 651 | 622 | 1,426 | 1,488 | 1,772 | 1,828 | |
| Texas | ...... | 831 | 1,040 | 744 | 807 | 1,160 | 1,182 | 1,384 | 1,596 | 2,546 | |
| Cases 2 States | 885 | 1,076 | 955 | 606 | 535 | 697 | 966 | 1,165 | 954 | 1,525 | 9,364 |
| Population 2 States | 3,534 | 3,567 | 3,616 | 3,649 | 3,692 | 3,740 | 3,780 | 3,822 | 3,857 | 3,894 | 37,151 |
| Rate | 25.0 | 30.2 | 26.4 | 16.6 | 14.5 | 18.6 | 25.6 | 30.5 | 24.7 | 39.2 | 25.2 |
| Montana | 1,901 | 891 | 620 | 676 | 850 | 1,042 | 1,337 | 2,065 | 2,209 | 846 | |
| Idaho | ...... | 461 | 498 | 327 | 589 | 309 | 285 | 1,098 | 1,093 | 711 | |
| Wyoming | 232 | 263 | 301 | 125 | 276 | 273 | 392 | 849 | 859 | 872 | |
| Colorado | 998 | 1,010 | 1,531 | 1,710 | 1,953 | 1,588 | 1,278 | 2,057 | 5,290 | 2,912 | |
| New Mexico | ..... | 402 | 355 | 427 | 394 | 311 | 348 | 545 | 701 | 766 | |
| Arizona | ...... | 181 | 196 | 136 | 439 | 397 | 383 | 460 | 437 | 169 | |
| Utah | 588 | ...... | 1,257 | ...... | 403 | ...... | 662 | 917 | 1,618 | 1,172 | |
| Nevada | ...... | ...... | 75 | 43 | 62 | 169 | 53 | 47 | 65 | 178 | |
| Cases 2 States | 1,230 | 1,273 | 1,832 | 1,835 | 2,229 | 1,861 | 1,670 | 2,906 | 6,149 | 3,784 | 24,769 |
| Population 2 States | 1,124 | 1,144 | 1,172 | 1,192 | 1,217 | 1,246 | 1,269 | 1,295 | 1,315 | 1,337 | 12,311 |
| Rate | 109.4 | 111.3 | 156.3 | 153.9 | 183.2 | 149.4 | 131.6 | 224.4 | 467.6 | 283.0 | 201.2 |
| Washington | 2,483 | 2,228 | 1,806 | 1,264 | 2,095 | 2,155 | 2,104 | 3,443 | 2,981 | 1,864 | |
| Oregon | 1,034 | 844 | 747 | 567 | 815 | 1,108 | 1,408 | 2,294 | 1,519 | 955 | |
| California | 2,870 | 4,117 | 5,557 | 5,602 | 7,834 | 8,955 | 5,727 | 7,759 | 8,543 | 7,539 | |
| Cases 3 States | 6,387 | 7,189 | 8,110 | 7,433 | 10,744 | 12,218 | 9,239 | 13,496 | 13,043 | 10,358 | 98,217 |
| Population 3 States | 5,497 | 5,635 | 5,846 | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 62,730 |
| Rate | 116.2 | 127.6 | 138.7 | 124.2 | 174.1 | 191.4 | 141.0 | 200.5 | 189.4 | 147.0 | 156.6 |
| Cases 35 States | 102,014 | 154,528 | 182,754 | 149,332 | 164,825 | 171,009 | 166,759 | 173,236 | 191,268 | 158,683 | 1,614,408 |
| Population 35 States | 87,391 | 88,600 | 90,306 | 91,542 | 93,063 | 94,778 | 96,168 | 97,655 | 98,917 | 100,248 | 938,668 |
| Rate | 116.7 | 174.4 | 202.4 | 163.1 | 177.1 | 180.4 | 173.4 | 177.4 | 193.4 | 158.3 | 172.0 |

## Septic Sore Throat

Cases Reported Annually by State Health Officers for the Years 1919–1928

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 6 | 16 | 26 | 14 | 15 | 36 | 29 | 43 | 31 | 22 | |
| New Hampshire | ...... | ...... | ...... | ...... | 4 | 19 | ...... | ...... | 51 | 74 | |
| Vermont | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 5 | ...... | 44 | |
| Massachusetts | 216 | 153 | 140 | 123 | 197 | 170 | 116 | 129 | 140 | 500 | |
| Rhode Island | 51 | 58 | 34 | 56 | 28 | 17 | 10 | 13 | 23 | 9 | |
| Connecticut | 24 | 19 | 36 | 26 | 35 | 66 | 134 | 407 | 119 | 79 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| New York | 310 | 317 | 478 | 232 | 249 | 351 | 573 | 167 | 173 | 190 | |
| New Jersey | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Pennsylvania | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Ohio | 53 | 101 | 128 | 349 | 640 | 543 | 713 | 58 | 659 | 782 | |
| Indiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Illinois | 150 | 1,576 | 1,150 | 621 | ...... | 85 | 82 | 92 | 76 | 154 | |
| Michigan | ...... | ...... | 1,390 | 417 | 180 | 260 | 574 | ...... | ...... | 295 | |
| Wisconsin | ...... | ...... | 2 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Minnesota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 22 | |
| Iowa | ...... | ...... | ...... | ...... | ...... | ...... | 1 | ...... | ...... | ...... | |
| Missouri | ...... | ...... | ...... | 481 | 334 | 77 | 62 | 66 | 131 | 217 | |
| North Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | |
| South Dakota | ...... | ...... | ...... | ...... | 3 | ...... | 1 | ...... | ...... | ...... | |
| Nebraska | 3 | ...... | 13 | 32 | 28 | 20 | 5 | 28 | 72 | 67 | |
| Kansas | 22 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 18 | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Delaware | ...... | ...... | ...... | ...... | ...... | ...... | 1 | ...... | 1 | 6 | |
| Maryland | 73 | 82 | 180 | 96 | 73 | 100 | 82 | 106 | 140 | 141 | |
| District of Columbia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| West Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 371 | 218 | 199 | 281 | 151 | 143 | 104 | 92 | 127 | 104 | |
| South Carolina | 152 | 194 | 75 | 51 | 47 | 38 | ...... | ...... | ...... | 10 | |
| Georgia | 411 | 357 | 156 | 115 | 78 | 50 | 449 | 523 | 394 | 437 | |
| Florida | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Kentucky | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 7 | |
| Tennessee | ...... | ...... | 52 | ...... | ...... | ...... | ...... | 7 | 23 | 30 | |
| Alabama | ...... | 38 | 14 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Mississippi | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Arkansas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Louisiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 14 | |
| Oklahoma | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 63 | 145 | |
| Texas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 7 | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Montana | 11 | 22 | 13 | 25 | 20 | 17 | 8 | 7 | 12 | 21 | |
| Idaho | ...... | ...... | ...... | 2 | ...... | ...... | 3 | 8 | 14 | 3 | |
| Wyoming | ...... | ...... | ...... | 22 | 1 | ...... | 9 | 6 | 4 | 9 | |
| Colorado | ...... | 2 | 6 | 14 | 14 | 13 | 9 | 12 | 16 | ...... | |
| New Mexico | ...... | 25 | 24 | 11 | 13 | 8 | 13 | 11 | 5 | 17 | |
| Arizona | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Utah | ...... | ...... | ...... | ...... | 2 | ...... | ...... | 4 | 3 | 3 | |
| Nevada | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Washington | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3 | 2 | 2 | |
| Oregon | 1 | 4 | ...... | 112 | 13 | ...... | 27 | 72 | 84 | 102 | |
| California | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |

## SMALLPOX

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 443 | 256 | 96 | 35 | 118 | 19 | 1 | 12 | 1 | 99 | |
| New Hampshire | ...... | 0 | 19 | 0 | 39 | 10 | 0 | 1 | 0 | 2 | |
| Vermont | 5 | ...... | 177 | 14 | 255 | 64 | 0 | 0 | 0 | 12 | |
| Massachusetts | 40 | 29 | 37 | 2 | 6 | 12 | 3 | 4 | 2 | 19 | |
| Rhode Island | 5 | 1 | 1 | 9 | 0 | 3 | 94 | 0 | 5 | 0 | |
| Connecticut | 6 | 2 | 8 | 447 | 52 | 100 | 4 | 2 | 0 | 170 | |
| Cases 4 States | 494 | 288 | 142 | 493 | 176 | 134 | 102 | 18 | 8 | 288 | 2,143 |
| Population 4 States | 6,562 | 6,654 | 6,770 | 6,869 | 6,977 | 7,092 | 7,182 | 7,286 | 7,375 | 7,468 | 70,235 |
| Rate | 7.5 | 4.3 | 2.1 | 7.2 | 2.5 | 1.9 | 1.4 | .25 | .11 | 3.9 | 3.1 |
| New York | 191 | 307 | 631 | 255 | 390 | 491 | 286 | 305 | 376 | 189 | |
| New Jersey | 109 | 182 | 255 | 18 | 30 | 340 | 189 | 14 | 22 | 91 | |
| Pennsylvania | 229 | 215 | 212 | 85 | 183 | 338 | 212 | 39 | 19 | 72 | |
| Cases 3 States | 529 | 704 | 1,098 | 358 | 603 | 1,169 | 687 | 358 | 417 | 352 | 6,275 |
| Population 3 States | 22,110 | 22,417 | 22,815 | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 236,828 |
| Rate | 2.4 | 3.1 | 4.8 | 1.5 | 2.6 | 4.9 | 2.8 | 1.5 | 1.7 | 1.4 | 2.6 |
| Ohio | 4,107 | 7,209 | 7,286 | 2,422 | 2,415 | 5,597 | 4,018 | 2,133 | 1,558 | 1,236 | |
| Indiana | 3,833 | 5,775 | 4,809 | 1,075 | 1,910 | 3,751 | 2,996 | 3,571 | 4,809 | 3,427 | |
| Illinois | 3,334 | 8,527 | 8,536 | 2,116 | 937 | 1,357 | 1,625 | 1,073 | 1,236 | 1,652 | |
| Michigan | 2,460 | 4,845 | 4,537 | 1,231 | 2,311 | 4,527 | 784 | 550 | 1,469 | 1,335 | |
| Wisconsin | 3,288 | 5,668 | 5,216 | 1,790 | 1,338 | 1,236 | 1,517 | 350 | 938 | 817 | |
| Cases 5 States | 17,022 | 32,024 | 30,384 | 8,634 | 8,911 | 16,468 | 10,940 | 7,677 | 10,010 | 8,467 | 150,537 |
| Population 5 States | 21,310 | 21,636 | 22,130 | 22,459 | 22,888 | 23,386 | 23,787 | 24,208 | 24,564 | 24,942 | 231,310 |
| Rate | 79.9 | 148.0 | 137.3 | 38.4 | 38.9 | 70.4 | 46.0 | 31.7 | 40.8 | 33.9 | 65.1 |
| Minnesota | 2,448 | 6,333 | 9,375 | 2,215 | 1,950 | 3,125 | 973 | 282 | 126 | 130 | |
| Iowa | 1,794 | 4,503 | 5,204 | 749 | 668 | 872 | 664 | 1,131 | 1,279 | 1,921 | |
| Missouri | ...... | ...... | ...... | 657 | 667 | 635 | 575 | 328 | 1,456 | 1,719 | |
| North Dakota | 211 | 533 | 1,777 | 657 | 444 | 575 | 204 | 276 | 208 | 85 | |
| South Dakota | 920 | 1,534 | 1,959 | 859 | 249 | 286 | 265 | 257 | 403 | 440 | |
| Nebraska | 2,844 | 4,135 | 3,048 | 484 | 97 | 286 | 886 | 806 | 691 | 1,472 | |
| Kansas | 2,437 | 3,900 | 4,630 | 842 | 481 | 1,154 | 311 | 535 | 1,393 | 2,550 | |
| Cases 6 States | 10,654 | 20,938 | 25,993 | 5,806 | 3,889 | 6,298 | 3,303 | 3,287 | 4,100 | 6,598 | 90,866 |
| Population 6 States | 9,099 | 9,171 | 9,253 | 9,314 | 9.389 | 9,471 | 9,537 | 9,610 | 9,672 | 9,738 | 94,254 |
| Rate | 117.1 | 228.3 | 280.9 | 62.3 | 41.4 | 66.5 | 34.6 | 34.2 | 42.4 | 67.8 | 96.4 |
| Delaware | ...... | 27 | 0 | 0 | 2 | 1 | 9 | 1 | 1 | 3 | |
| Maryland | 229 | 179 | 214 | 17 | 25 | 97 | 16 | 5 | 9 | 22 | |
| District of Columbia | 173 | 89 | 66 | 66 | 69 | 147 | 59 | 16 | 63 | 24 | |
| Virginia | 1,972 | 3,468 | 1,873 | 511 | 542 | 295 | 318 | 621 | 978 | 217 | |
| West Virginia | 2,217 | 2,592 | 2,443 | 453 | 253 | 434 | 820 | 387 | 1,099 | 1,350 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina.......... | 2,321 | 2,961 | 2,513 | 1,409 | 3,352 | 3,845 | 1,920 | 1,594 | 1,702 | 2,419 | |
| South Carolina.......... | 304 | 1,118 | 1,084 | 342 | 536 | 693 | 915 | 647 | 577 | 331 | |
| Georgia................ | 1,710 | 1,328 | 2,191 | 756 | 673 | 2,107 | 444 | 957 | 1,934 | 236 | |
| Florida................ | 45 | 428 | 1,351 | 318 | 227 | 117 | 207 | 2,890 | 1,356 | 156 | |
| Cases 7 States.... | 8,971 | 12,163 | 11,735 | 3,872 | 5,677 | 7,735 | 4,699 | 7,117 | 7,718 | 4,755 | 74,442 |
| Population 7 States.... | 13,675 | 13,874 | 14,170 | 14,387 | 14,651 | 14,950 | 15,180 | 15,436 | 15,655 | 15,883 | 147,861 |
| Rate................ | 65.6 | 87.7 | 82.8 | 26.9 | 38.7 | 51.7 | 31.0 | 46.1 | 49.3 | 29.9 | 50.3 |
| Kentucky............. | ...... | ...... | ...... | 460 | 228 | 322 | 514 | 202 | 394 | 812 | |
| Tennessee............. | ...... | ...... | 2,913 | 567 | 1,037 | 3,100 | 1,805 | 607 | 648 | 815 | |
| Alabama.............. | 935 | 1,442 | 2,072 | 623 | 323 | 2,394 | 4,288 | 1,285 | 1,242 | 342 | |
| Mississippi............ | 2,502 | 3,148 | 2,161 | 729 | 292 | 711 | 1,216 | 639 | 368 | 370 | |
| Cases 2 States.... | 3,437 | 4,590 | 4,233 | 1,352 | 615 | 3,105 | 5,504 | 1,924 | 1,610 | 712 | 27,082 |
| Population 2 States.... | 4,128 | 4,150 | 4,182 | 4,203 | 4,231 | 4,263 | 4,290 | 4,317 | 4,340 | 4,364 | 42,468 |
| Rate................ | 83.3 | 110.6 | 101.2 | 32.2 | 14.5 | 72.8 | 128.3 | 44.6 | 37.1 | 16.3 | 63.8 |
| Arkansas.............. | 588 | 789 | 481 | 173 | 315 | 467 | 251 | 220 | 166 | 266 | |
| Louisiana.............. | 1,226 | 1,564 | 1,421 | 645 | 693 | 489 | 883 | 960 | 286 | 646 | |
| Oklahoma.............. | ...... | ...... | 1,393 | 736 | 1,274 | 1,007 | 775 | 868 | 1,644 | 3,445 | |
| Texas................. | ...... | 2,113 | 1,781 | 1,427 | 669 | 1,380 | 1,309 | 1,898 | 2,341 | 1,980 | |
| Cases 2 States.... | 1,814 | 2,353 | 1,902 | 818 | 1,008 | 956 | 1,134 | 1,180 | 452 | 912 | 12,529 |
| Population 2 States.... | 3,534 | 3,567 | 3,616 | 3,649 | 3,692 | 3,740 | 3,780 | 3,822 | 3,857 | 3,894 | 37,151 |
| Rate................ | 51.3 | 66.0 | 52.6 | 22.4 | 27.3 | 25.6 | 30.0 | 30.9 | 11.7 | 23.4 | 33.7 |
| Montana.............. | 970 | 1,066 | 1,466 | 636 | 732 | 950 | 376 | 395 | 575 | 853 | |
| Idaho................. | ...... | 2,556 | 857 | 241 | 155 | 547 | 526 | 450 | 759 | 655 | |
| Wyoming.............. | 462 | 911 | 434 | 206 | 20 | 43 | 70 | 22 | 110 | 163 | |
| Colorado.............. | 1,715 | 2,898 | 2,606 | 1,086 | 90 | 75 | 19 | 201 | 353 | 387 | |
| New Mexico........... | ...... | 251 | 110 | 53 | 97 | 31 | 25 | 49 | 90 | 82 | |
| Arizona............... | ...... | 172 | 192 | 468 | 100 | 160 | 117 | 18 | 10 | 417 | |
| Utah.................. | 1,238 | ...... | 3,499 | ...... | 168 | ...... | 113 | 341 | 891 | 964 | |
| Nevada................ | ...... | ...... | 235 | 51 | 10 | 49 | 97 | 24 | 56 | 81 | |
| Cases 2 States.... | 2,177 | 3,809 | 3,040 | 1,292 | 110 | 118 | 89 | 223 | 463 | 550 | 11,871 |
| Population 2 States.... | 1,124 | 1,144 | 1,172 | 1,192 | 1,217 | 1,246 | 1,269 | 1,295 | 1,315 | 1,337 | 12,311 |
| Rate................ | 193.7 | 333.0 | 259.4 | 108.4 | 9.0 | 9.5 | 7.0 | 17.2 | 35.2 | 41.1 | 96.4 |
| Washington............ | 4,390 | 6,146 | 4,441 | 1,595 | 1,623 | 1,973 | 2,004 | 2,413 | 1,806 | 1,772 | |
| Oregon................ | 2,629 | 2,998 | 1,596 | 1,141 | 837 | 831 | 863 | 1,557 | 1,167 | 1,974 | |
| California............. | 2,002 | 4,486 | 5,581 | 2,129 | 2,025 | 9,445 | 4,921 | 2,794 | 984 | 1,176 | |
| Cases 3 States.... | 9,021 | 13,630 | 11,618 | 4,865 | 4,485 | 12,249 | 7,788 | 6,764 | 3,957 | 4,922 | 79,299 |
| Population 3 States.... | 5,497 | 5,635 | 5,846 | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 62,730 |
| Rate................ | 164.1 | 241.9 | 198.7 | 81.3 | 72.7 | 191.9 | 118.8 | 100.5 | 57.5 | 69.9 | 126.4 |
| Cases 34 States... | 54,119 | 90,499 | 90,145 | 27,490 | 25,474 | 48,232 | 34,246 | 28,548 | 28,735 | 27,556 | 455,044 |
| Population 34 States.. | 87,039 | 88,248 | 89,954 | 91,190 | 92,711 | 94,426 | 95,816 | 97,303 | 98,565 | 99,896 | 935,148 |
| Rate................ | 62.2 | 102.6 | 100.2 | 30.1 | 27.5 | 51.1 | 35.7 | 29.3 | 29.2 | 27.6 | 48.7 |

### Typhoid Fever

Cases Reported Annually by State Health Officers for the Years 1919–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 251 | 481 | 301 | 243 | 214 | 338 | 265 | 171 | 227 | 135 | |
| New Hampshire | ...... | 74 | 85 | 51 | 33 | 25 | 28 | 19 | 17 | 14 | |
| Vermont | 102 | ...... | 148 | 70 | 45 | 42 | 40 | 34 | 33 | 26 | |
| Massachusetts | 940 | 937 | 917 | 693 | 622 | 566 | 592 | 547 | 466 | 310 | |
| Rhode Island | 89 | 68 | 111 | 59 | 51 | 79 | 94 | 45 | 57 | 49 | |
| Connecticut | 415 | 426 | 464 | 315 | 297 | 238 | 265 | 165 | 112 | 88 | |
| Cases 4 States | 1,695 | 1,912 | 1,793 | 1,310 | 1,184 | 1,221 | 1,216 | 928 | 862 | 582 | 12,703 |
| Population 4 States | 6,562 | 6,654 | 6,770 | 6,869 | 6,977 | 7,092 | 7,182 | 7,286 | 7,375 | 7,468 | 70,235 |
| Rate | 25.8 | 28.7 | 26.5 | 19.1 | 17.0 | 17.2 | 16.9 | 12.7 | 11.7 | 7.8 | 18.1 |
| New York | 2,551 | 2,694 | 3,049 | 2,255 | 2,201 | 3,303 | 2,900 | 2,385 | 1,659 | 1,613 | |
| New Jersey | 617 | 657 | 1,210 | 851 | 620 | 644 | 773 | 669 | 384 | 410 | |
| Pennsylvania | 3,802 | 2,883 | 4,699 | 2,809 | 2,393 | 2,092 | 2,437 | 2,168 | 1,474 | 1,496 | |
| Cases 3 States | 6,970 | 6,234 | 8,958 | 5,915 | 5,214 | 6,039 | 6,110 | 5,222 | 3,517 | 3,519 | 57,698 |
| Population 3 States | 22,110 | 22,417 | 22,815 | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 236,828 |
| Rate | 31.5 | 27.8 | 39.3 | 25.6 | 22.2 | 25.3 | 25.2 | 21.2 | 14.1 | 14.0 | 24.4 |
| Ohio | 2,708 | 3,004 | 4,206 | 2,161 | 1,672 | 1,453 | 1,946 | 1,655 | 1,086 | 931 | |
| Indiana | 974 | 823 | 1,070 | 535 | 643 | 744 | 1,029 | 795 | 458 | 378 | |
| Illinois | 1,200 | 1,800 | 2,423 | 1,788 | 1,862 | 1,469 | 2,103 | 1,670 | 1,278 | 954 | |
| Michigan | 940 | 1,438 | 1,849 | 1,108 | 982 | 782 | 963 | 582 | 579 | 390 | |
| Wisconsin | 215 | 313 | 512 | 372 | 331 | 261 | 284 | 236 | 244 | 284 | |
| Cases 5 States | 6,037 | 7,378 | 10,060 | 5.964 | 5,490 | 4,709 | 6,325 | 4,938 | 3,645 | 2,937 | 57,483 |
| Population 5 States | 21,310 | 21,636 | 22,130 | 22,459 | 22,888 | 23,386 | 23,787 | 24,208 | 24,564 | 24,942 | 231,310 |
| Rate | 28.3 | 34.1 | 45.5 | 26.6 | 24.0 | 20.1 | 26.6 | 20.4 | 14.8 | 11.8 | 24.9 |
| Minnesota | 641 | 684 | 776 | 482 | 446 | 336 | 334 | 272 | 258 | 188 | |
| Iowa | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 221 | 118 | |
| Missouri | ...... | ...... | ...... | 732 | 736 | 672 | 1,085 | 1,037 | 755 | 712 | |
| North Dakota | 139 | 215 | 86 | 94 | 129 | 111 | 119 | 87 | 49 | 79 | |
| South Dakota | 113 | 77 | 62 | 127 | 88 | 169 | 160 | 110 | 98 | 60 | |
| Nebraska | 110 | 181 | 200 | 141 | 65 | 45 | 86 | 148 | 119 | 92 | |
| Kansas | 836 | 1,154 | 958 | 727 | 809 | 582 | 812 | 583 | 511 | 381 | |
| Cases 5 States | 1,839 | 2,311 | 2,082 | 1,571 | 1,537 | 1,243 | 1,511 | 1,200 | 1,035 | 800 | 15,129 |
| Population 5 States | 6,704 | 6,765 | 6,844 | 6,902 | 6,974 | 7,053 | 7,117 | 7,187 | 7,247 | 7,310 | 70,103 |
| Rate | 27.4 | 34.2 | 30.4 | 22.8 | 22.0 | 17.6 | 21.2 | 16.7 | 14.3 | 10.9 | 21.6 |
| Delaware | ...... | 103 | 130 | 154 | 96 | 55 | 126 | 60 | 56 | 52 | |
| Maryland | 1,616 | 1,031 | 1,590 | 1,223 | 1,216 | 973 | 1,270 | 1,013 | 874 | 789 | |
| District of Columbia | 153 | 159 | 195 | 188 | 118 | 133 | 126 | 90 | 78 | 46 | |
| Virginia | 2,456 | 1,854 | 2,746 | 1,837 | 1,989 | 1,510 | 2,099 | 1,596 | 1,403 | 1,023 | |
| West Virginia | 1,510 | 1,052 | 1,807 | 1,129 | 1,333 | 1,019 | 1,597 | 1,274 | 1,073 | 711 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | 2,956 | 1,856 | 2,099 | 1,960 | 1,577 | 1,318 | 1,192 | 1,502 | 1,280 | 1,073 | |
| South Carolina | 633 | 547 | 496 | 438 | 364 | 450 | ...... | 2,689 | 2,414 | 1,878 | |
| Georgia | 1,448 | 1,141 | 1,502 | 990 | 651 | ...... | 2,016 | 1,701 | 1,723 | 1,061 | |
| Florida | 536 | 518 | 720 | 535 | 599 | 611 | 720 | 639 | 587 | 327 | |
| Cases 5 States | 9,227 | 6,470 | 9,157 | 6,872 | 6,832 | 5,564 | 7,004 | 6,114 | 5,295 | 3,969 | 66,504 |
| Population 5 States | 9,119 | 9,272 | 9,498 | 9,669 | 9,873 | 10,101 | 10,274 | 10,471 | 10,639 | 10,816 | 99,732 |
| Rate | 101.2 | 69.8 | 96.4 | 71.1 | 69.2 | 55.1 | 68.2 | 58.4 | 49.8 | 36.7 | 66.7 |
| Kentucky | ...... | ...... | ...... | 1,310 | 982 | 707 | 980 | 741 | 738 | 719 | |
| Tennessee | ...... | ...... | 2,164 | 1,268 | 993 | 1,465 | 1,954 | 3,652 | 3,231 | 1,885 | |
| Alabama | 1,073 | 1,049 | 1,294 | 1,167 | 1,939 | 2,079 | 2,345 | 2,255 | 1,985 | 1,333 | |
| Mississippi | 3,611 | 2,644 | 2,665 | 2,230 | 1,690 | 2,470 | 4,415 | 2,613 | 1,597 | 1,517 | |
| Cases 2 States | 4,684 | 3,693 | 3,959 | 3,397 | 3,629 | 4,549 | 6,760 | 4,868 | 3,582 | 2,850 | 41,971 |
| Population 2 States | 4,128 | 4,150 | 4,182 | 4,203 | 4,231 | 4,263 | 4,290 | 4,317 | 4,340 | 4,364 | 42,468 |
| Rate | 113.5 | 89.0 | 94.7 | 80.8 | 85.8 | 106.7 | 157.6 | 112.8 | 82.5 | 65.3 | 98.8 |
| Arkansas | 677 | 913 | 914 | 675 | 840 | 974 | 1,367 | 990 | 1,106 | 840 | |
| Louisiana | 1,253 | 814 | 1,033 | 1,090 | 922 | 1,252 | 2,318 | 1,187 | 1,066 | 1,049 | |
| Oklahoma | ...... | ...... | 667 | 386 | 832 | 1,044 | 3,053 | 2,467 | 2,326 | 1,597 | |
| Texas | ...... | 1,145 | 658 | 604 | 933 | 1,238 | 1,072 | 725 | 655 | 503 | |
| Cases 2 States | 1,930 | 1,727 | 1,947 | 1,765 | 1,762 | 2,226 | 3,685 | 2,177 | 2,172 | 1,889 | 21,280 |
| Population 2 States | 3,534 | 3,567 | 3,616 | 3,649 | 3,692 | 3,740 | 3,780 | 3,822 | 3,857 | 3,894 | 37,151 |
| Rate | 54.6 | 48.4 | 53.8 | 48.4 | 47.7 | 59.5 | 97.5 | 57.0 | 56.3 | 48.5 | 57.3 |
| Montana | 274 | 241 | 187 | 144 | 159 | 130 | 238 | 117 | 108 | 133 | |
| Idaho | ...... | 149 | 137 | 120 | 72 | 146 | 98 | 135 | 93 | 96 | |
| Wyoming | 49 | 89 | 93 | 125 | 61 | 45 | 97 | 32 | 31 | 54 | |
| Colorado | 216 | 372 | 522 | 567 | 411 | 229 | 418 | 325 | 319 | 172 | |
| New Mexico | ...... | 344 | 322 | 373 | 359 | 489 | 405 | 301 | 356 | 247 | |
| Arizona | ...... | 86 | 70 | 64 | 75 | 99 | 261 | 133 | 142 | 91 | |
| Utah | 320 | ...... | 398 | ...... | 473 | ...... | 232 | 198 | 164 | 129 | |
| Nevada | ...... | ...... | 59 | 39 | 38 | 11 | 7 | 17 | 13 | 8 | |
| Cases 2 States | 265 | 461 | 615 | 692 | 472 | 274 | 515 | 357 | 350 | 226 | 4,227 |
| Population 2 States | 1,124 | 1,144 | 1,172 | 1,192 | 1,217 | 1,246 | 1,269 | 1,295 | 1,315 | 1,337 | 12,311 |
| Rate | 23.6 | 40.3 | 52.5 | 58.1 | 38.8 | 22.0 | 40.6 | 27.6 | 26.6 | 16.9 | 34.3 |
| Washington | 379 | 469 | 486 | 556 | 547 | 435 | 390 | 416 | 288 | 282 | |
| Oregon | 134 | 104 | 144 | 220 | 169 | 215 | 263 | 306 | 320 | 189 | |
| California | 964 | 1,137 | 954 | 953 | 888 | 1,777 | 853 | 1,023 | 685 | 686 | |
| Cases 3 States | 1,477 | 1,710 | 1,584 | 1,729 | 1,604 | 2,427 | 1,506 | 1,745 | 1,293 | 1,157 | 16,232 |
| Population 3 States | 5,497 | 5,635 | 5,846 | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 62,730 |
| Rate | 26.9 | 30.3 | 27.1 | 28.9 | 26.0 | 38.0 | 23.0 | 25.9 | 18.8 | 16.4 | 25.9 |
| Cases 31 States | 34,124 | 31,896 | 40,155 | 29,215 | 27,724 | 28,252 | 34,632 | 27,549 | 21,751 | 17,929 | 293,227 |
| Population 31 States | 80,088 | 81,240 | 82,873 | 84,060 | 85,518 | 87,159 | 88,490 | 89,915 | 91,124 | 92,401 | 862,868 |
| Rate | 42.6 | 39.3 | 48.5 | 34.8 | 32.4 | 32.4 | 39.1 | 30.6 | 23.9 | 19.4 | 34.0 |

## UNDULANT FEVER

Cases Reported by State Health Officers for the Years 1927 and 1928

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 9 | |
| New Hampshire | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Vermont | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | |
| Massachusetts | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Rhode Island | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Connecticut | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 13 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| New York | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 21 | 65 | |
| New Jersey | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | 1 | |
| Pennsylvania | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | 22 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Ohio | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | 41 | |
| Indiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | 40 | |
| Illinois | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 5 | 25 | |
| Michigan | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 26 | 38 | |
| Wisconsin | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | 9 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Minnesota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 8 | 14 | |
| Iowa | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 14 | 120 | |
| Missouri | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 31 | |
| North Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 5 | |
| South Dakota | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | 1 | |
| Nebraska | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3 | |
| Kansas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3 | 14 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Delaware | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3 | |
| Maryland | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | 11 | |
| District of Columbia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | 2 | |
| Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | 6 | |
| West Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3 | |
| South Carolina | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | |
| Georgia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 39 | |
| Florida | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Kentucky | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 30 | |
| Tennessee | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 80 | |
| Alabama | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Mississippi | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Arkansas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Louisiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | |
| Oklahoma | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Texas | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Montana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | |
| Idaho | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Wyoming | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Colorado | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | |
| New Mexico | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | 1 | |
| Arizona | ...... | .... | ...... | ...... | ...... | ...... | ...... | ...... | 5 | 8 | |
| Utah | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nevada | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Washington | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | |
| Oregon | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 12 | |
| California | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 14 | 11 | |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Cases States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Population States | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Rate | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |

### WHOOPING COUGH

Cases Reported Annually by State Health Officers for the Years 1922–1928, and Case Rates per 100,000 Estimated Population

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | ...... | ...... | ...... | 784 | 2,254 | 1,537 | 655 | 1,639 | 1,584 | 1,290 | |
| New Hampshire | ...... | ...... | ...... | 120 | 314 | 166 | 148 | 181 | 326 | 229 | |
| Vermont | ...... | ...... | ...... | 1,329 | 2,464 | 1,848 | 985 | 2,422 | 1,519 | 1,301 | |
| Massachusetts | ...... | ...... | ...... | 6,823 | 10,612 | 4,062 | 8,077 | 11,547 | 6,273 | 8,023 | |
| Rhode Island | ...... | ...... | ...... | 443 | 245 | 200 | 254 | 679 | 293 | 271 | |
| Connecticut | ...... | ...... | ...... | 2,109 | 2,758 | 2,237 | 3,743 | 2,604 | 2,461 | 4,309 | |
| Cases 6 States | ...... | ...... | ...... | 11,608 | 18,647 | 10,050 | 13,862 | 19,072 | 12,456 | 15,423 | 101,118 |
| Population 6 States | ...... | ...... | ...... | 7,668 | 7,778 | 7,894 | 7,986 | 8,092 | 8,182 | 8,276 | 55,876 |
| Rate | ...... | ...... | ...... | 151.4 | 240.0 | 127.3 | 174.0 | 236.0 | 152.2 | 186.4 | 181.0 |
| New York | ...... | ...... | ...... | 14,650 | 17,083 | 21,619 | 15,034 | 19,367 | 16,231 | 19,075 | |
| New Jersey | ...... | ...... | ...... | 5,888 | 4,919 | 7,937 | 7,929 | 5,162 | 8,344 | 6,692 | |
| Pennsylvania | ...... | ...... | ...... | 10,757 | 14,890 | 15,072 | 13,020 | 17,720 | 10,798 | 17,785 | |
| Cases 3 States | ...... | ...... | ...... | 31,295 | 36,892 | 44,628 | 35,983 | 42,249 | 35,373 | 43,552 | 269,972 |
| Population 3 States | ...... | ...... | ...... | 23,131 | 23,496 | 23,896 | 24,238 | 24,598 | 24,902 | 25,225 | 169,486 |
| Rate | ...... | ...... | ...... | 135.3 | 157.0 | 187.0 | 148.5 | 172.0 | 142.0 | 173.0 | 159.3 |
| Ohio | ...... | ...... | ...... | 8,430 | 9,203 | 10,608 | 8,975 | 15,186 | 7,478 | 9,236 | |
| Indiana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Illinois | ...... | ...... | ...... | 8,756 | 9,844 | 8,238 | 11,074 | 9,874 | 11,126 | 10,458 | |
| Michigan | ...... | ...... | ...... | 5,642 | 7,617 | 4,364 | 7,576 | 8,767 | 6,825 | 9,700 | |
| Wisconsin | ...... | ...... | ...... | 6,767 | 6,408 | 6,535 | 6,239 | 8,893 | 5,912 | 5,567 | |
| Cases 4 States | ...... | ...... | ...... | 29,595 | 33,072 | 29,745 | 33,864 | 42,720 | 31,341 | 34,961 | 235,298 |
| Population 4 States | ...... | ...... | ...... | 19,459 | 19,857 | 20,320 | 20,692 | 21,084 | 21,414 | 21,766 | 144,592 |
| Rate | ...... | ...... | ...... | 152.1 | 166.6 | 146.4 | 163.7 | 202.6 | 146.4 | 160.6 | 162.7 |
| Minnesota | ...... | ...... | ...... | 1,193 | 1,526 | 1,471 | 1,655 | 2,080 | 1,031 | 2,239 | |
| Iowa | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Missouri | ...... | ...... | ...... | 672 | 4,695 | 1,866 | 1,651 | 2,949 | 2,684 | 2,780 | |
| North Dakota | ...... | ...... | ...... | 69 | 370 | 616 | 1,007 | 795 | 183 | 499 | |
| South Dakota | ...... | ...... | ...... | 115 | 379 | 523 | 258 | 657 | 453 | 306 | |
| Nebraska | ...... | ...... | ...... | 169 | 844 | 382 | 503 | 928 | 616 | 544 | |
| Kansas | ...... | ...... | ...... | 1,280 | 4,227 | 3,359 | 2,789 | 4,510 | 3,316 | 3,544 | |
| Cases 6 States | ...... | ...... | ...... | 3,498 | 12,041 | 8,217 | 7,863 | 11,919 | 8,283 | 9,912 | 61,733 |
| Population 6 States | ...... | ...... | ...... | 10,340 | 10,427 | 10,523 | 10,601 | 10,685 | 10,757 | 10,833 | 74,166 |
| Rate | ...... | ...... | ...... | 33.8 | 115.5 | 78.1 | 74.2 | 111.5 | 77.0 | 91.5 | 83.2 |
| Delaware | ...... | ...... | ...... | 55 | 139 | 181 | 120 | 130 | 108 | 139 | |
| Maryland | ...... | ...... | ...... | 1,934 | 4,623 | 2,735 | 4,269 | 3,609 | 3,384 | 3,771 | |
| District of Columbia | ...... | ...... | ...... | 545 | 1,391 | 487 | 745 | 1,020 | 476 | 550 | |
| Virginia | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| West Virginia | ...... | ...... | ...... | 577 | 1,821 | 3,547 | 1,514 | 2,688 | 2,618 | 756 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina | ...... | ...... | ...... | 6,905 | 16,075 | 12,945 | 4,296 | 11,099 | 19,966 | 5,002 | |
| South Carolina | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Georgia | ...... | ...... | ...... | 629 | 706 | 946 | 1,458 | 1,066 | 1,464 | 778 | |
| Florida | ...... | ...... | ...... | 95 | 411 | 443 | 493 | 748 | 654 | 321 | |
| Cases 7 States | ...... | ...... | ...... | 10,740 | 25,166 | 21,284 | 12,895 | 20,360 | 28,670 | 11,317 | 130,432 |
| Population 7 States | ...... | ...... | ...... | 10,496 | 10,708 | 10,946 | 11,128 | 11,331 | 11,507 | 11,688 | 77,804 |
| Rate | ...... | ...... | ...... | 102.3 | 235.0 | 194.4 | 116.0 | 180.0 | 249.2 | 96.8 | 168.0 |
| Kentucky | ...... | ...... | ...... | 522 | 1,083 | 744 | 717 | 1,100 | 2,238 | 798 | |
| Tennessee | ...... | ...... | ...... | 1,095 | 2,613 | 3,156 | 1,395 | 2,438 | 2,876 | 1,070 | |
| Alabama | ...... | ...... | ...... | 281 | 2,483 | 2,423 | 1,302 | 1,780 | 2,030 | 1,084 | |
| Mississippi | ...... | ...... | ...... | 9,294 | 12,046 | 11,035 | 8,041 | 16,068 | 16,742 | 13,511 | |
| Cases 4 States | ...... | ...... | ...... | 11,192 | 18,225 | 17,358 | 11,455 | 21,386 | 23,886 | 16,463 | 119,965 |
| Population 4 States | ...... | ...... | ...... | 9,043 | 9,108 | 9,184 | 9,246 | 9,309 | 9,363 | 9,419 | 64,672 |
| Rate | ...... | ...... | ...... | 123.8 | 200.1 | 189.0 | 123.9 | 229.7 | 255.1 | 174.8 | 185.5 |
| Arkansas | ...... | ...... | ...... | 371 | 1,388 | 1,786 | 716 | 1,448 | 1,739 | 800 | |
| Louisiana | ...... | ...... | ...... | 528 | 1,216 | 389 | 731 | 438 | 748 | 503 | |
| Oklahoma | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Texas | ...... | ...... | ...... | 877 | 2,018 | 2,139 | 2,034 | 1,933 | 1,277 | 1,598 | |
| Cases 3 States | ...... | ...... | ...... | 1,776 | 4,622 | 4,314 | 3,481 | 3,819 | 3,764 | 2,901 | 24,677 |
| Population 3 States | ...... | ...... | ...... | 8,546 | 8,691 | 8,857 | 8,992 | 9,135 | 9,254 | 9,381 | 62,856 |
| Rate | ...... | ...... | ...... | 20.8 | 53.2 | 48.7 | 38.7 | 41.8 | 40.7 | 30.9 | 39.3 |
| Montana | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Idaho | ...... | ...... | ...... | 44 | 205 | 130 | 392 | 731 | 317 | 85 | |
| Wyoming | ...... | ...... | ...... | 85 | 270 | 269 | 191 | 520 | 284 | 280 | |
| Colorado | ...... | ...... | ...... | 803 | 1,505 | 1,190 | 1,027 | 2,144 | 651 | 1,296 | |
| New Mexico | ...... | ...... | ...... | 137 | 193 | 379 | 457 | 875 | 276 | 968 | |
| Arizona | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Utah | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | |
| Nevada | ...... | ...... | ...... | 22 | 78 | 26 | 33 | 3 | 13 | 129 | |
| Cases 5 States | ...... | ...... | ...... | 1,091 | 2,251 | 1,994 | 2,100 | 4,273 | 1,541 | 2,758 | 16,008 |
| Population 5 States | ...... | ...... | ...... | 2,103 | 2,148 | 2,198 | 2,238 | 2,282 | 2,318 | 2,356 | 15,643 |
| Rate | ...... | ...... | ...... | 51.9 | 104.8 | 90.7 | 93.8 | 187.2 | 66.5 | 117.1 | 102.3 |
| Washington | ...... | ...... | ...... | 1,476 | 2,806 | 733 | 3,273 | 2,145 | 1,263 | 773 | |
| Oregon | ...... | ...... | ...... | 176 | 372 | 231 | 851 | 1,331 | 530 | 179 | |
| California | ...... | ...... | ...... | 3,298 | 5,387 | 3,176 | 10,466 | 3,518 | 7,500 | 9,691 | |
| Cases 3 States | ...... | ...... | ...... | 4,950 | 8,565 | 4,140 | 14,590 | 6,994 | 9,293 | 10,643 | 59,175 |
| Population 3 States | ...... | ...... | ...... | 5,986 | 6,170 | 6,382 | 6,553 | 6,731 | 6,885 | 7,045 | 45,752 |
| Rate | ...... | ...... | ...... | 82.7 | 138.8 | 64.9 | 222.6 | 103.9 | 135.0 | 151.1 | 129.3 |
| Cases 41 States | ...... | ...... | ...... | 105,745 | 159,481 | 141,730 | 136,093 | 172,792 | 154,607 | 147,930 | 1,018,378 |
| Population 41 States | ...... | ...... | ...... | 96,772 | 98,383 | 100,200 | 101,674 | 103,247 | 104,582 | 105,989 | 710,847 |
| Rate | ...... | ...... | ...... | 109.3 | 162.1 | 141.4 | 133.9 | 167.4 | 147.8 | 139.6 | 143.3 |

### URBAN MORBIDITY RATES

Case Rates per 100,000 Population as Indicated by Cases Reported in United States, Cities of Over 100,000 Estimated Population

| DISEASE | CASE RATES PER 100,000 POPULATION | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | Increase or Decrease* |
| Chickenpox | 169 | 202 | 245 | 189 | 224 | 246 | 217 | + |
| Diphtheria | 225 | 197 | 167 | 139 | 133 | 163 | 129 | −27.5 |
| Measles | 526 | 711 | 436 | 332 | 792 | 307 | 588 | + |
| Meningococcus meningitis | 3 | 2 | 2 | 2 | 3 | 4 | 10 | + |
| Mumps | 72 | 75 | 166 | 67 | 76 | 160 | 140 | + |
| Poliomyelitis | .... | .... | 7 | 5 | 3 | 9 | 5 | |
| Scarlet fever | 180 | 207 | 215 | 226 | 213 | 237 | 178 | + |
| Smallpox | 17 | 18 | 50 | 25 | 16 | 14 | 9 | −54.0 |
| Typhoid fever | 19 | 19 | 22 | 21 | 16 | 14 | 11 | −31.8 |
| Whooping cough | .... | 167 | 156 | 168 | 192 | 143 | 170 | |

NOTE: Only cities of 100,000 population or over are included. For some diseases and some years reports were not received from all cities in the population class; hence, the number of cities included is not the same for the different diseases, or for the same disease for the different years. As the comparison is of rates, not numbers of cases, it is believed the figures would not be greatly changed if all cities of 100,000 population or over could have been included throughout the table.

*Increase or decrease with per cent, 1922–1924, compared with 1926–1928.

All rates are based on estimated populations and may require revision when the results of the fifteenth census are known.

The comparisons shown above indicate recent reductions in morbidity in urban communities for smallpox, typhoid, and diphtheria, with increases rather than reductions for the other diseases in the table. Better reporting might account for the slight increases, but it is evident that little impress is yet being made on the case incidence of these diseases.

(Seasonal prevalence tables follow.)

## CHICKENPOX

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1922 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 187 | 152 | 147 | 90 | 71 | 66 | 40 | 13 | 19 | 74 | 208 | 222 | |
| New Hampshire | 23 | 12 | 10 | 10 | 17 | 10 | 7 | .... | 3 | 9 | 25 | 40 | |
| Vermont | 220 | 177 | 124 | 95 | 98 | 100 | 50 | 20 | 31 | 127 | 198 | 264 | |
| Massachusetts | 1,307 | 909 | 822 | 637 | 624 | 615 | 288 | 79 | 87 | 381 | 961 | 1,270 | |
| Rhode Island | 44 | 52 | 40 | 46 | 26 | 26 | 9 | 4 | 3 | 16 | 35 | 47 | |
| Connecticut | 484 | 351 | 291 | 203 | 257 | 256 | 94 | 22 | 24 | 132 | 360 | 423 | |
| Total (6 States) | 2,265 | 1,653 | 1,434 | 1,081 | 1,093 | 1,073 | 488 | 138 | 167 | 739 | 1,787 | 2,266 | 14,184 |
| Per cent | 15.67 | 12.66 | 9.92 | 7.73 | 7.56 | 7.67 | 3.38 | .95 | 1.19 | 5.11 | 12.77 | 15.68 | 100 |
| New York | 3,007 | 2,367 | 2,227 | 1,770 | 1,831 | 1,936 | 806 | 274 | 212 | 870 | 2,162 | 2,840 | |
| New Jersey | 1,300 | 997 | 902 | 786 | 788 | 718 | 217 | 57 | 65 | 315 | 757 | 1,061 | |
| Pennsylvania | 3,298 | 2,713 | 2,367 | 1,690 | 1,475 | 1,173 | 487 | 167 | 231 | 1,150 | 3,040 | 3,448 | |
| Total (3 States) | 7,605 | 6,077 | 5,496 | 4,246 | 4,094 | 3,827 | 1,510 | 498 | 508 | 2,335 | 5,959 | 7,349 | 49,504 |
| Per cent | 15.07 | 13.33 | 10.89 | 8.70 | 8.11 | 7.84 | 2.99 | .99 | 1.04 | 4.63 | 12.20 | 14.57 | 100 |
| Ohio | 1,845 | 1,325 | 1,222 | 984 | 929 | 837 | 337 | 108 | 131 | 705 | 1,806 | 2,069 | |
| Indiana | 653 | 501 | 439 | 390 | 243 | 236 | 74 | 25 | 20 | 166 | 489 | 654 | |
| Illinois | 2,070 | 1,534 | 1,416 | 1,063 | 1,002 | 921 | 371 | 140 | 156 | 645 | 1,570 | 1,859 | |
| Michigan | 1,130 | 814 | 827 | 666 | 654 | 744 | 272 | 92 | 68 | 325 | 948 | 1,168 | |
| Wisconsin | 1,199 | 801 | 755 | 691 | 614 | 644 | 320 | 79 | 94 | 401 | 1,043 | 1,392 | |
| Total (5 States) | 6,897 | 4,975 | 4,659 | 3,794 | 3,442 | 3,382 | 1,374 | 444 | 469 | 2,242 | 5,856 | 7,142 | 44,676 |
| Per cent | 15.15 | 12.10 | 10.23 | 8.61 | 7.56 | 7.67 | 3.02 | .98 | 1.06 | 4.92 | 13.29 | 15.68 | 100 |
| Minnesota | 775 | 563 | 551 | 451 | 491 | 456 | 160 | 51 | 57 | 300 | 721 | 782 | |
| Iowa | 159 | 113 | 109 | 113 | 64 | 46 | 20 | 6 | 8 | 52 | 166 | 191 | |
| Missouri | 421 | 369 | 300 | 238 | 226 | 154 | 31 | 18 | 18 | 96 | 253 | 360 | |
| North Dakota | 84 | 65 | 58 | 36 | 34 | 25 | 17 | 8 | 8 | 46 | 84 | 127 | |
| South Dakota | 121 | 88 | 74 | 60 | 34 | 23 | 14 | 8 | 8 | 25 | 83 | 97 | |
| Nebraska | 158 | 144 | 100 | 104 | 88 | 63 | 20 | 8 | 14 | 47 | 137 | 225 | |
| Kansas | 649 | 487 | 408 | 325 | 281 | 155 | 33 | 12 | 38 | 207 | 520 | 659 | |
| Total (7 States) | 2,367 | 1,829 | 1,600 | 1,327 | 1,218 | 922 | 295 | 111 | 151 | 773 | 1,964 | 2,442 | 14,999 |
| Per cent | 15.48 | 13.25 | 10.47 | 8.97 | 7.97 | 6.23 | 1.93 | .73 | 1.02 | 5.06 | 13.28 | 15.98 | 100 |
| Delaware | 34 | 29 | 17 | 15 | 10 | 8 | 3 | 1 | 1 | 10 | 15 | 29 | |
| **Maryland** | **639** | **510** | **503** | **400** | **379** | **278** | **73** | **18** | **26** | **116** | **353** | **533** | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | 205 | 187 | 193 | 157 | 117 | 73 | 25 | 6 | 6 | 17 | 90 | 154 | |
| Virginia | 971 | 903 | 807 | 673 | 570 | 330 | 118 | 54 | 73 | 209 | 550 | 775 | |
| West Virginia | 250 | 205 | 204 | 159 | 110 | 79 | 33 | 10 | 19 | 94 | 239 | 311 | |
| North Carolina | 727 | 789 | 783 | 552 | 408 | 228 | 63 | 31 | 30 | 92 | 396 | 591 | |
| South Carolina | 168 | 139 | 173 | 177 | 91 | 72 | 19 | 8 | 9 | 13 | 51 | 78 | |
| Georgia | 120 | 148 | 170 | 149 | 107 | 49 | 13 | 7 | 9 | 17 | 40 | 84 | |
| Florida | 71 | 85 | 140 | 130 | 69 | 23 | 4 | 4 | 3 | 2 | 8 | 45 | |
| Total (8 States) | 3,185 | 2,995 | 2,990 | 2,412 | 1,861 | 1,140 | 351 | 139 | 176 | 570 | 1,742 | 2,600 | 20,161 |
| Per cent | 15.50 | 16.14 | 14.55 | 12.13 | 9.06 | 5.73 | 1.71 | .68 | .89 | 2.77 | 8.76 | 12.65 | 100 |
| Kentucky | 103 | 91 | 67 | 66 | 47 | 35 | 9 | 10 | 10 | 18 | 60 | 108 | |
| Tennessee | 256 | 278 | 217 | 218 | 154 | 90 | 38 | 22 | 29 | 57 | 141 | 185 | |
| Alabama | 286 | 214 | 248 | 198 | 151 | 65 | 20 | 12 | 16 | 21 | 89 | 131 | |
| Mississippi | 734 | 832 | 776 | 713 | 530 | 286 | 209 | 230 | 180 | 175 | 408 | 588 | |
| Total (4 States) | 1,379 | 1,415 | 1,308 | 1,195 | 882 | 476 | 276 | 274 | 235 | 271 | 698 | 1,012 | 9,421 |
| Per cent | 14.36 | 16.32 | 13.62 | 12.86 | 9.19 | 5.12 | 2.87 | 2.85 | 2.53 | 2.82 | 7.51 | 10.54 | 100 |
| Arkansas | 150 | 140 | 125 | 112 | 77 | 56 | 33 | 34 | 32 | 33 | 77 | 93 | |
| Louisiana | 37 | 59 | 60 | 127 | 26 | 8 | 3 | 1 | 1 | 3 | 17 | 29 | |
| Oklahoma | 141 | 115 | 94 | 102 | 73 | 38 | 15 | 4 | 4 | 16 | 55 | 73 | |
| Texas | 231 | 355 | 332 | 321 | 215 | 134 | 32 | 20 | 17 | 19 | 73 | 208 | |
| Total (4 States) | 559 | 669 | 611 | 662 | 391 | 236 | 83 | 59 | 54 | 71 | 222 | 403 | 4,020 |
| Per cent | 13.64 | 18.08 | 14.91 | 16.70 | 9.54 | 5.95 | 2.03 | 1.44 | 1.36 | 1.73 | 5.60 | 9.84 | 100 |
| Montana | 115 | 90 | 81 | 67 | 55 | 32 | 18 | 8 | 19 | 96 | 170 | 100 | |
| Idaho | 74 | 50 | 36 | 31 | 27 | 20 | 10 | 8 | 6 | 45 | 93 | 89 | |
| Wyoming | 54 | 43 | 35 | 37 | 44 | 20 | 7 | 2 | 10 | 41 | 91 | 66 | |
| Colorado | 248 | 236 | 215 | 161 | 186 | 123 | 59 | 15 | 17 | 80 | 206 | 250 | |
| New Mexico | 117 | 100 | 82 | 67 | 36 | 20 | 6 | 2 | 4 | 13 | 66 | 65 | |
| Arizona | 36 | 44 | 45 | 38 | 23 | 10 | 4 | 2 | 4 | 10 | 19 | 27 | |
| Utah | 660 | 488 | 375 | 339 | 316 | 268 | 122 | 50 | 67 | 282 | 668 | 621 | |
| Nevada | 17 | 8 | 8 | 8 | 4 | 4 | 2 | 1 | 1 | 6 | 13 | 11 | |
| Total (8 States) | 1,321 | 1,059 | 877 | 748 | 691 | 497 | 228 | 88 | 128 | 573 | 1,326 | 1,229 | 8,765 |
| Per cent | 14.79 | 13.13 | 9.82 | 8.65 | 7.74 | 5.75 | 2.55 | .99 | 1.48 | 6.41 | 15.34 | 13.76 | 100 |
| Washington | 432 | 395 | 380 | 346 | 329 | 260 | 117 | 52 | 66 | 256 | 490 | 450 | |
| Oregon | 159 | 110 | 120 | 106 | 101 | 76 | 44 | 16 | 22 | 80 | 135 | 154 | |
| California | 1,310 | 1,708 | 1,816 | 1,437 | 1,172 | 809 | 293 | 146 | 182 | 445 | 875 | 1,065 | |
| Total (3 States) | 1,901 | 2,213 | 2,316 | 1,889 | 1,602 | 1,145 | 454 | 214 | 270 | 781 | 1,500 | 1,669 | 15,954 |
| Per cent | 11.69 | 15.07 | 14.24 | 12.00 | 9.85 | 7.28 | 2.79 | 1.32 | 1.72 | 4.80 | 9.53 | 10.26 | 100 |
| Total (48 States) | 27,479 | 22,885 | 21,291 | 17,354 | 15,274 | 12,698 | 5,059 | 1,965 | 2,158 | 8,355 | 21,054 | 26,112 | 181,684 |
| Per cent | 14.84 | 13.69 | 11.50 | 9.68 | 8.25 | 7.09 | 2.73 | 1.06 | 1.20 | 4.51 | 11.75 | 14.10 | 100 |

## DIPHTHERIA

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases, and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1921 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 51 | 30 | 32 | 22 | 27 | 26 | 20 | 31 | 32 | 37 | 62 | 43 | |
| New Hampshire | 25 | 17 | 14 | 11 | 13 | 15 | 13 | 4 | 19 | 25 | 49 | 32 | |
| Vermont | 19 | 18 | 13 | 13 | 16 | 16 | 14 | 12 | 20 | 22 | 30 | 17 | |
| Massachusetts | 890 | 655 | 629 | 576 | 558 | 459 | 380 | 380 | 318 | 583 | 620 | 677 | |
| Rhode Island | 79 | 73 | 55 | 56 | 46 | 48 | 42 | 31 | 46 | 74 | 91 | 104 | |
| Connecticut | 274 | 202 | 206 | 154 | 125 | 136 | 111 | 91 | 112 | 173 | 221 | 293 | |
| Total (6 States) | 1,338 | 995 | 949 | 832 | 785 | 700 | 580 | 549 | 547 | 914 | 1,073 | 1,166 | 10,428 |
| Per cent | 12.59 | 10.37 | 8.93 | 8.09 | 7.39 | 6.81 | 5.46 | 5.17 | 5.32 | 8.60 | 10.43 | 10.97 | 100 |
| New York | 1,684 | 1,523 | 1,438 | 1,576 | 1,572 | 1,463 | 1,047 | 681 | 750 | 1,022 | 1,512 | 1,638 | |
| New Jersey | 603 | 436 | 480 | 437 | 397 | 349 | 293 | 275 | 332 | 567 | 607 | 684 | |
| Pennsylvania | 1,599 | 1,355 | 1,280 | 995 | 880 | 736 | 703 | 551 | 750 | 1,109 | 1,295 | 1,303 | |
| Total (3 States) | 3,886 | 3,314 | 3,198 | 3,008 | 2,849 | 2,548 | 2,043 | 1,507 | 1,832 | 2,698 | 3,414 | 3,625 | 33,922 |
| Per cent | 11.24 | 10.61 | 9.25 | 8.99 | 8.24 | 7.62 | 5.91 | 4.36 | 5.48 | 7.80 | 10.20 | 10.49 | 100 |
| Ohio | 971 | 725 | 628 | 478 | 470 | 388 | 302 | 347 | 420 | 869 | 1,331 | 1,129 | |
| Indiana | 349 | 276 | 222 | 152 | 138 | 105 | 97 | 102 | 163 | 456 | 472 | 320 | |
| Illinois | 1,007 | 796 | 671 | 577 | 466 | 475 | 377 | 325 | 416 | 587 | 787 | 844 | |
| Michigan | 912 | 568 | 569 | 457 | 368 | 401 | 321 | 326 | 369 | 787 | 711 | 590 | |
| Wisconsin | 367 | 248 | 239 | 203 | 144 | 161 | 154 | 166 | 179 | 282 | 301 | 347 | |
| Total (5 States) | 3,606 | 2,613 | 2,329 | 1,867 | 1,586 | 1,530 | 1,251 | 1,266 | 1,547 | 2,981 | 3,602 | 3,230 | 27,408 |
| Per cent | 12.91 | 10.36 | 8.34 | 6.91 | 5.68 | 5.66 | 4.48 | 4.53 | 5.72 | 10.67 | 13.32 | 11.56 | 100 |
| Minnesota | 338 | 256 | 244 | 203 | 260 | 188 | 171 | 203 | 356 | 526 | 493 | 409 | |
| Iowa | 149 | 99 | 77 | 66 | 72 | 61 | 51 | 59 | 80 | 228 | 180 | 133 | |
| Missouri | 407 | 337 | 271 | 244 | 232 | 170 | 117 | 115 | 213 | 438 | 429 | 371 | |
| North Dakota | 57 | 42 | 41 | 29 | 20 | 20 | 14 | 23 | 14 | 41 | 26 | 37 | |
| South Dakota | 43 | 35 | 37 | 25 | 19 | 17 | 18 | 18 | 28 | 39 | 53 | 40 | |
| Nebraska | 85 | 56 | 49 | 42 | 32 | 35 | 28 | 26 | 66 | 98 | 110 | 121 | |
| Kansas | 220 | 175 | 128 | 109 | 100 | 59 | 62 | 61 | 146 | 257 | 206 | 190 | |
| Total (7 States) | 1,299 | 1,000 | 847 | 718 | 735 | 550 | 461 | 505 | 903 | 1,627 | 1,497 | 1,301 | 11,443 |
| Per cent | 11.14 | 9.49 | 7.26 | 6.36 | 6.30 | 4.87 | 3.95 | 4.33 | 8.00 | 13.95 | 13.26 | 11.16 | 100 |
| Delaware | 22 | 11 | 12 | 9 | 13 | 6 | 4 | 7 | 10 | 15 | 19 | 13 | |
| Maryland | 269 | 177 | 175 | 137 | 115 | 110 | 87 | 107 | 124 | 199 | 248 | 229 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | 102 | 84 | 53 | 39 | 63 | 31 | 29 | 20 | 46 | 75 | 114 | 87 | |
| Virginia | 316 | 232 | 163 | 103 | 90 | 65 | 99 | 199 | 414 | 795 | 687 | 368 | |
| West Virginia | 141 | 112 | 106 | 75 | 57 | 58 | 62 | 73 | 103 | 264 | 241 | 129 | |
| North Carolina | 205 | 140 | 127 | 91 | 78 | 73 | 114 | 311 | 817 | 1,110 | 708 | 379 | |
| South Carolina | 164 | 129 | 105 | 96 | 98 | 77 | 82 | 186 | 372 | 532 | 435 | 237 | |
| Georgia | 68 | 59 | 58 | 44 | 32 | 33 | 46 | 70 | 158 | 301 | 169 | 120 | |
| Florida | 72 | 56 | 43 | 36 | 31 | 36 | 50 | 55 | 79 | 104 | 129 | 88 | |
| Total (8 States) | 1,359 | 1,000 | 842 | 630 | 577 | 489 | 563 | 1,028 | 2,123 | 3,395 | 2,750 | 1,650 | 16,406 |
| Per cent | 8.13 | 6.62 | 5.04 | 3.89 | 3.45 | 3.02 | 3.37 | 6.15 | 13.12 | 20.30 | 16.99 | 9.87 | 100 |
| Kentucky | 139 | 103 | 58 | 60 | 39 | 31 | 29 | 32 | 122 | 192 | 195 | 135 | |
| Tennessee | 84 | 63 | 44 | 42 | 26 | 14 | 21 | 69 | 145 | 253 | 156 | 118 | |
| Alabama | 108 | 61 | 48 | 32 | 38 | 30 | 50 | 104 | 240 | 322 | 231 | 155 | |
| Mississippi | 99 | 81 | 70 | 48 | 40 | 38 | 50 | 124 | 192 | 417 | 290 | 171 | |
| Total (4 States) | 430 | 308 | 220 | 182 | 143 | 113 | 150 | 329 | 699 | 1,184 | 872 | 579 | 5,209 |
| Per cent | 8.10 | 6.42 | 4.14 | 3.54 | 2.69 | 2.20 | 2.83 | 6.20 | 13.61 | 22.30 | 16.97 | 10.91 | 100 |
| Arkansas | 54 | 28 | 22 | 14 | 11 | 11 | 8 | 13 | 39 | 90 | 105 | 67 | |
| Louisiana | 109 | 89 | 80 | 53 | 40 | 34 | 47 | 56 | 78 | 128 | 166 | 146 | |
| Oklahoma | 107 | 60 | 65 | 50 | 34 | 20 | 18 | 34 | 66 | 179 | 200 | 157 | |
| Texas | 207 | 157 | 145 | 99 | 90 | 58 | 65 | 73 | 144 | 184 | 278 | 315 | |
| Total (4 States) | 477 | 334 | 312 | 216 | 175 | 123 | 138 | 176 | 327 | 581 | 749 | 685 | 4,293 |
| Per cent | 10.90 | 8.45 | 7.13 | 5.10 | 4.00 | 2.90 | 3.15 | 4.02 | 7.72 | 13.28 | 17.69 | 15.66 | 100 |
| Montana | 44 | 33 | 45 | 36 | 25 | 18 | 17 | 21 | 29 | 25 | 54 | 39 | |
| Idaho | 15 | 18 | 8 | 13 | 15 | 10 | 8 | 13 | 25 | 28 | 32 | 25 | |
| Wyoming | 12 | 7 | 4 | 7 | 6 | 2 | 4 | 3 | 5 | 6 | 6 | 7 | |
| Colorado | 189 | 142 | 127 | 138 | 146 | 122 | 103 | 129 | 179 | 230 | 192 | 188 | |
| New Mexico | 80 | 73 | 49 | 51 | 28 | 35 | 31 | 25 | 42 | 40 | 33 | 32 | |
| Arizona | 14 | 12 | 10 | 13 | 7 | 7 | 5 | 5 | 5 | 14 | 19 | 20 | |
| Utah | 83 | 66 | 47 | 43 | 61 | 47 | 36 | 33 | 42 | 63 | 64 | 57 | |
| Nevada | 2 | 1 | .... | .... | .... | .... | .. | 2 | .... | 2 | .... | .... | |
| Total (8 States) | 439 | 352 | 290 | 301 | 288 | 241 | 204 | 231 | 327 | 408 | 400 | 368 | 3,849 |
| Per cent | 11.19 | 9.93 | 7.39 | 7.93 | 7.34 | 6.35 | 5.20 | 5.89 | 8.61 | 10.40 | 10.54 | 9.38 | 100 |
| Washington | 138 | 103 | 80 | 95 | 91 | 79 | 76 | 68 | 101 | 149 | 148 | 149 | |
| Oregon | 131 | 101 | 87 | 88 | 74 | 59 | 58 | 52 | 53 | 138 | 153 | 160 | |
| California | 700 | 596 | 675 | 559 | 576 | 579 | 400 | 511 | 503 | 784 | 787 | 837 | |
| Total (3 States) | 969 | 800 | 842 | 742 | 741 | 717 | 534 | 631 | 657 | 1,071 | 1,088 | 1,146 | 9,938 |
| Per cent | 9.57 | 8.74 | 8.31 | 7.57 | 7.32 | 7.31 | 5.27 | 6.23 | 6.70 | 10.57 | 11.10 | 11.31 | 100 |
| Total (48 States) | 13,803 | 10,716 | 9,829 | 8,496 | 7,879 | 7,011 | 5,924 | 6,222 | 8,962 | 14,859 | 15,445 | 13,750 | 122,896 |
| Per cent | 11.02 | 9.47 | 7.85 | 7.01 | 6.29 | 5.78 | 4.73 | 4.97 | 7.39 | 11.86 | 12.74 | 10.98 | 100 |

## MEASLES

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1921 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 221 | 283 | 728 | 620 | 423 | 257 | 96 | 22 | 21 | 10 | 52 | 63 | |
| New Hampshire | 127 | 155 | 163 | 123 | 260 | 163 | 78 | 10 | 6 | 47 | 48 | 31 | |
| Vermont | 128 | 56 | 105 | 291 | 287 | 369 | 196 | 40 | 31 | 23 | 19 | 71 | |
| Massachusetts | 2,230 | 2,325 | 2,836 | 3,776 | 3,355 | 2,724 | 1,023 | 268 | 157 | 526 | 1,096 | 1,320 | |
| Rhode Island | 26 | 61 | 58 | 75 | 93 | 63 | 50 | 10 | 7 | 11 | 12 | 34 | |
| Connecticut | 571 | 753 | 782 | 779 | 985 | 556 | 261 | 59 | 28 | 110 | 261 | 542 | |
| Total (6 States) | 3,303 | 3,633 | 4,672 | 5,664 | 5,403 | 4,132 | 1,704 | 409 | 250 | 727 | 1,488 | 2,061 | 33,446 |
| Per cent | 9.69 | 11.80 | 13.71 | 17.17 | 15.85 | 12.53 | 5.00 | 1.20 | .76 | 2.13 | 4.51 | 6.05 | 100 |
| New York | 3,813 | 5,835 | 6,280 | 7,823 | 10,685 | 7,442 | 2,702 | 545 | 276 | 495 | 762 | 1,817 | |
| New Jersey | 909 | 1,108 | 2,559 | 3,572 | 2,815 | 1,847 | 592 | 126 | 58 | 123 | 358 | 539 | |
| Pennsylvania | 3,452 | 3,721 | 5,305 | 4,816 | 5,960 | 5,103 | 1,615 | 400 | 327 | 1,037 | 2,126 | 2,818 | |
| Total (3 States) | 8,174 | 10,664 | 14,144 | 16,211 | 19,460 | 14,392 | 4,909 | 1,071 | 661 | 1,655 | 3,246 | 5,174 | 99,761 |
| Per cent | 8.04 | 11.61 | 13.91 | 16.48 | 19.14 | 14.63 | 4.83 | 1.05 | .67 | 1.63 | 3.30 | 5.09 | 100 |
| Ohio | 934 | 1,122 | 2,292 | 3,292 | 3,587 | 2,135 | 644 | 131 | 83 | 113 | 193 | 532 | |
| Indiana | 692 | 761 | 940 | 1,283 | 687 | 650 | 190 | 58 | 29 | 55 | 134 | 225 | |
| Illinois | 2,154 | 3,337 | 4,615 | 5,894 | 4,854 | 2,744 | 982 | 205 | 125 | 205 | 606 | 868 | |
| Michigan | 707 | 956 | 1,278 | 2,738 | 2,913 | 2,359 | 519 | 109 | 71 | 144 | 403 | 579 | |
| Wisconsin | 1,156 | 1,817 | 2,240 | 2,440 | 1,718 | 1,477 | 568 | 283 | 142 | 252 | 392 | 760 | |
| Total (5 States) | 5,643 | 7,993 | 11,365 | 15,647 | 13,759 | 9,365 | 2,903 | 786 | 450 | 769 | 1,728 | 2,964 | 73,372 |
| Per cent | 7.55 | 11.83 | 15.20 | 21.62 | 18.40 | 12.94 | 3.88 | 1.05 | .62 | 1.03 | 2.39 | 3.96 | 100 |
| Minnesota | 146 | 506 | 1,026 | 868 | 613 | 349 | 120 | 32 | 21 | 25 | 38 | 64 | |
| Iowa | 160 | 526 | 862 | 441 | 206 | 94 | 41 | 10 | 5 | 11 | 7 | 51 | |
| Missouri | 729 | 957 | 1,600 | 2,362 | 2,409 | 848 | 198 | 57 | 37 | 63 | 176 | 391 | |
| North Dakota | 138 | 286 | 182 | 142 | 134 | 94 | 31 | 18 | 9 | 27 | 20 | 38 | |
| South Dakota | 62 | 86 | 96 | 160 | 283 | 142 | 61 | 14 | 5 | 8 | 15 | 16 | |
| Nebraska | 74 | 149 | 285 | 290 | 290 | 157 | 25 | 9 | 4 | 6 | 16 | 37 | |
| Kansas | 270 | 708 | 2,230 | 2,524 | 2,350 | 723 | 89 | 42 | 41 | 61 | 52 | 91 | |
| Total (7 States) | 1,579 | 3,218 | 6,281 | 6,787 | 6,285 | 2,407 | 565 | 182 | 122 | 201 | 324 | 688 | 28,639 |
| Per cent | 5.41 | 12.21 | 21.52 | 24.03 | 21.53 | 8.52 | 1.94 | .62 | .43 | .69 | 1.15 | 2.36 | 100 |
| Delaware | 9 | 17 | 34 | 38 | 42 | 41 | 11 | 5 | 2 | 4 | 3 | 7 | |
| Maryland | 395 | 636 | 597 | 1,249 | 1,120 | 621 | 220 | 76 | 35 | 71 | 206 | 405 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | 44 | 42 | 124 | 194 | 151 | 130 | 68 | 8 | 4 | 8 | 9 | 16 | |
| Virginia | 1,095 | 2,586 | 3,490 | 2,980 | 2,189 | 927 | 378 | 113 | 102 | 226 | 273 | 346 | |
| West Virginia | 381 | 632 | 798 | 818 | 628 | 338 | 103 | 34 | 22 | 37 | 68 | 267 | |
| North Carolina | 689 | 1,427 | 2,211 | 2,556 | 1,705 | 1,023 | 284 | 111 | 62 | 133 | 154 | 265 | |
| South Carolina | 80 | 40 | 169 | 139 | 237 | 106 | 13 | 2 | 2 | 6 | 5 | 9 | |
| Georgia | 175 | 452 | 548 | 345 | 190 | 174 | 14 | 14 | 17 | 10 | 8 | 81 | |
| Florida | 20 | 41 | 183 | 239 | 109 | 51 | 55 | 10 | 5 | 3 | 7 | 19 | |
| Total (8 States) | 2,888 | 5,873 | 8,154 | 8,558 | 6,371 | 3,411 | 1,146 | 373 | 251 | 498 | 733 | 1,415 | 39,671 |
| Per cent | 7.14 | 16.08 | 20.17 | 21.87 | 15.76 | 8.72 | 2.83 | .92 | .64 | 1.23 | 1.87 | 3.50 | 100 |
| Kentucky | 252 | 246 | 401 | 311 | 204 | 126 | 109 | 29 | 50 | 18 | 106 | 223 | |
| Tennessee | 291 | 487 | 739 | 770 | 594 | 316 | 71 | 33 | 16 | 20 | 28 | 154 | |
| Alabama | 75 | 197 | 541 | 904 | 953 | 644 | 177 | 34 | 39 | 20 | 40 | 44 | |
| Mississippi | 1,306 | 1,802 | 1,434 | 1,942 | 1,760 | 905 | 282 | 108 | 180 | 163 | 271 | 917 | |
| Total (4 States) | 1,924 | 2,732 | 3,115 | 3,927 | 3,511 | 1,991 | 639 | 204 | 285 | 221 | 445 | 1,338 | 20,332 |
| Per cent | 9.28 | 14.60 | 15.03 | 19.58 | 16.94 | 9.93 | 3.08 | .98 | 1.42 | 1.07 | 2.22 | 6.46 | 100 |
| Arkansas | 120 | 110 | 542 | 412 | 268 | 145 | 61 | 18 | 18 | 7 | 15 | 22 | |
| Louisiana | 20 | 60 | 58 | 94 | 80 | 53 | 9 | 6 | 4 | 5 | 6 | 13 | |
| Oklahoma | 48 | 123 | 171 | 264 | 599 | 183 | 13 | 4 | 5 | 10 | 9 | 16 | |
| Texas | 108 | 433 | 563 | 449 | 273 | 280 | 91 | 25 | 8 | 8 | 11 | 78 | |
| Total (4 States) | 296 | 726 | 1,334 | 1,219 | 1,220 | 661 | 174 | 53 | 35 | 30 | 41 | 129 | 5,918 |
| Per cent | 4.91 | 13.33 | 22.12 | 20.88 | 20.23 | 11.32 | 2.88 | .88 | .60 | .50 | .70 | 2.14 | 100 |
| Montana | 38 | 107 | 139 | 97 | 80 | 9 | 9 | 3 | 5 | 3 | 16 | 14 | |
| Idaho | 17 | 37 | 106 | 151 | 63 | 21 | 18 | 8 | 2 | 7 | 8 | 8 | |
| Wyoming | 7 | 11 | 53 | 53 | 47 | 56 | 19 | 3 | 10 | 18 | 33 | 6 | |
| Colorado | 31 | 25 | 191 | 220 | 342 | 232 | 35 | 7 | 11 | 12 | 13 | 23 | |
| New Mexico | 81 | 65 | 229 | 158 | 141 | 110 | 9 | 12 | 6 | 5 | 9 | 49 | |
| Arizona | 68 | 61 | 257 | 157 | 170 | 46 | 13 | 6 | 5 | 1 | 36 | 18 | |
| Utah | 43 | 39 | 88 | 53 | 116 | 130 | 41 | 23 | 25 | 26 | 18 | 26 | |
| Nevada | 4 | 2 | 2 | 2 | 2 | 1 | 1 | .... | .... | .... | 1 | 2 | |
| Total (8 States) | 289 | 347 | 1,065 | 891 | 961 | 605 | 145 | 62 | 64 | 72 | 134 | 146 | 4,781 |
| Per cent | 5.93 | 7.88 | 21.86 | 18.90 | 19.72 | 12.83 | 2.98 | 1.27 | 1.36 | 1.48 | 2.84 | 3.00 | 100 |
| Washington | 66 | 77 | 272 | 284 | 347 | 318 | 145 | 57 | 20 | 23 | 39 | 68 | |
| Oregon | 68 | 210 | 209 | 333 | 174 | 80 | 26 | 11 | 12 | 16 | 21 | 24 | |
| California | 737 | 1,779 | 2,866 | 2,259 | 2,047 | 1,774 | 404 | 146 | 74 | 109 | 120 | 183 | |
| Total (3 States) | 871 | 2,066 | 3,347 | 2,876 | 2,568 | 2,172 | 575 | 214 | 106 | 148 | 180 | 275 | 15,398 |
| Per cent | 5.55 | 14.58 | 21.33 | 18.94 | 16.36 | 14.30 | 3.66 | 1.36 | .70 | .94 | 1.19 | 1.75 | 100 |
| Total (48 States) | 24,967 | 37,252 | 53,477 | 61,780 | 59,538 | 39,136 | 12,760 | 3,354 | 2,224 | 4,321 | 8,319 | 14,190 | 321,318 |
| Per cent | 7.62 | 12.59 | 16.33 | 19.49 | 18.18 | 12.35 | 3.90 | 1.02 | .70 | 1.32 | 2.62 | 4.33 | 100 |

## MENINGOCOCCUS MENINGITIS

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1921 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | |
| New Hampshire | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Vermont | .... | .... | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | |
| Massachusetts | 11 | 9 | 12 | 13 | 10 | 9 | 8 | 6 | 10 | 7 | 9 | 8 | |
| Rhode Island | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | |
| Connecticut | 5 | 6 | 7 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 3 | 2 | |
| Total (5 States) | 18 | 17 | 21 | 23 | 18 | 16 | 15 | 13 | 17 | 14 | 14 | 13 | 199 |
| Per cent | 8.88 | 9.28 | 10.35 | 11.72 | 8.88 | 8.15 | 7.40 | 6.41 | 8.66 | 6.90 | 7.13 | 6.41 | 100 |
| New York | 27 | 19 | 35 | 26 | 27 | 23 | 19 | 17 | 21 | 18 | 18 | 14 | |
| New Jersey | 10 | 10 | 11 | 8 | 10 | 9 | 7 | 6 | 6 | 6 | 8 | 7 | |
| Pennsylvania | 10 | 13 | 12 | 10 | 12 | 9 | 9 | 12 | 9 | 11 | 8 | 12 | |
| Total (3 States) | 47 | 42 | 58 | 44 | 49 | 41 | 35 | 35 | 36 | 35 | 34 | 33 | 489 |
| Per cent | 9.43 | 9.33 | 11.64 | 9.12 | 9.83 | 8.50 | 7.02 | 7.02 | 7.46 | 7.02 | 7.05 | 6.62 | 100 |
| Ohio | 8 | 5 | 7 | 8 | 6 | 7 | 5 | 6 | 5 | 6 | 6 | 4 | |
| Indiana | 4 | 4 | 5 | 4 | 3 | 3 | 2 | 3 | 4 | 4 | 3 | 3 | |
| Illinois | 15 | 9 | 17 | 11 | 15 | 8 | 11 | 11 | 11 | 9 | 11 | 14 | |
| Michigan | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Wisconsin | 9 | 9 | 5 | 8 | 3 | 5 | 5 | 6 | 4 | 8 | 6 | 4 | |
| Total (4 States) | 36 | 27 | 34 | 31 | 27 | 23 | 23 | 26 | 24 | 27 | 26 | 25 | 329 |
| Per cent | 10.74 | 8.92 | 10.14 | 9.55 | 8.05 | 7.09 | 6.86 | 7.75 | 7.40 | 8.05 | 8.01 | 7.46 | 100 |
| Minnesota | 3 | 4 | 5 | 4 | 4 | 3 | 5 | 5 | 4 | 1 | 2 | 3 | |
| Iowa | 1 | 1 | 4 | 1 | 1 | 1 | 2 | 3 | 5 | 2 | 3 | 1 | |
| Missouri | 5 | 4 | 6 | 5 | 5 | 4 | 4 | 4 | 3 | 3 | 6 | 7 | |
| North Dakota | 1 | 3 | 1 | 1 | .... | .... | 1 | 1 | 1 | 2 | .... | 3 | |
| South Dakota | 1 | 1 | .... | 1 | .... | 1 | 1 | .... | .... | 1 | 1 | 2 | |
| Nebraska | 2 | 1 | 1 | 1 | .... | 1 | .... | 1 | .... | 1 | 1 | 2 | |
| Kansas | 6 | 4 | 3 | 3 | 3 | 2 | 3 | 6 | 3 | 2 | 3 | 3 | |
| Total (7 States) | 19 | 18 | 20 | 16 | 13 | 12 | 16 | 20 | 16 | 12 | 16 | 21 | 199 |
| Per cent | 9.37 | 9.83 | 9.86 | 8.15 | 6.41 | 6.11 | 7.89 | 9.86 | 8.15 | 5.92 | 8.15 | 10.35 | 100 |
| Delaware | .... | 1 | .... | .... | 1 | .... | 1 | 1 | 1 | .... | .... | .... | |
| Maryland | 2 | 4 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | |
| Virginia | 10 | 8 | 9 | 7 | 6 | 7 | 7 | 7 | 4 | 5 | 5 | 7 | |
| West Virginia | 4 | 3 | 2 | 3 | 1 | 1 | 5 | 2 | 2 | 2 | 4 | 2 | |
| North Carolina | 3 | 2 | 4 | 1 | 4 | 4 | 3 | 3 | 4 | 2 | 2 | 2 | |
| South Carolina | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Georgia | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | .... | 2 | 2 | 2 | |
| Florida | 2 | .... | 2 | 2 | 2 | 2 | 1 | 3 | .... | 1 | 1 | .... | |
| Total (7 States) | 25 | 22 | 22 | 18 | 19 | 18 | 21 | 19 | 13 | 15 | 17 | 14 | 223 |
| Per cent | 11.00 | 10.72 | 9.68 | 8.18 | 8.36 | 8.18 | 9.24 | 8.36 | 5.91 | 6.60 | 7.73 | 6.16 | 100 |
| Kentucky | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Tennessee | 4 | 5 | 3 | 4 | 3 | 2 | 2 | 4 | 2 | 2 | 1 | 3 | |
| Alabama | 4 | 4 | 6 | 4 | 4 | 3 | 3 | 4 | 3 | 2 | 3 | 3 | |
| Mississippi | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | |
| Total (3 States) | 10 | 11 | 11 | 10 | 8 | 6 | 6 | 9 | 6 | 5 | 6 | 7 | 95 |
| Per cent | 10.33 | 12.58 | 11.36 | 10.67 | 8.26 | 6.40 | 6.20 | 9.30 | 6.40 | 5.16 | 6.40 | 7.23 | 100 |
| Arkansas | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Louisiana | 4 | 5 | 4 | 4 | 2 | 2 | 1 | 2 | 2 | 4 | 3 | 3 | |
| Oklahoma | 1 | 1 | 1 | .... | 1 | .... | 2 | 4 | .... | 1 | .... | 1 | |
| Texas | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | .... | 2 | 1 | |
| Total (4 States) | 9 | 10 | 7 | 7 | 7 | 4 | 5 | 8 | 4 | 6 | 6 | 6 | 79 |
| Per cent | 11.18 | 13.75 | 8.69 | 8.98 | 8.69 | 5.13 | 6.21 | 9.94 | 5.13 | 7.45 | 7.70 | 7.45 | 100 |
| Montana | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | |
| Idaho | 7 | 8 | 14 | 8 | 5 | 3 | 3 | 1 | 1 | 4 | 4 | 4 | |
| Wyoming | 2 | .... | .... | 1 | 1 | .... | .... | 1 | .... | .... | 2 | 3 | |
| Colorado | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| New Mexico | .... | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | |
| Arizona | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | .... | .... | 1 | |
| Utah | 5 | 3 | 4 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 7 | |
| Nevada | .... | 1 | 1 | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | |
| Total (7 States) | 16 | 15 | 22 | 15 | 10 | 7 | 7 | 5 | 4 | 7 | 9 | 16 | 133 |
| Per cent | 11.80 | 12.25 | 16.23 | 11.43 | 7.38 | 5.34 | 5.16 | 3.69 | 3.05 | 5.16 | 6.86 | 11.80 | 100 |
| Washington | 2 | 2 | 3 | 6 | 3 | 2 | 5 | 2 | 3 | 2 | 3 | 4 | |
| Oregon | 1 | 1 | 4 | 2 | 3 | 1 | 1 | .... | 1 | 2 | 1 | 1 | |
| California | 12 | 12 | 11 | 15 | 13 | 11 | 13 | 10 | 11 | 9 | 9 | 14 | |
| Total (3 States) | 15 | 15 | 18 | 23 | 19 | 14 | 19 | 12 | 15 | 13 | 13 | 19 | 195 |
| Per cent | 7.55 | 8.36 | 9.06 | 11.96 | 9.56 | 7.28 | 9.56 | 6.04 | 7.80 | 6.54 | 6.76 | 9.56 | 100 |
| Total (43 States) | 195 | 177 | 213 | 187 | 170 | 141 | 147 | 147 | 135 | 134 | 141 | 154 | 1,941 |
| Per cent | 9.86 | 9.91 | 10.77 | 9.77 | 8.59 | 7.37 | 7.43 | 7.43 | 7.05 | 6.77 | 7.37 | 7.78 | 100 |

## MUMPS

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1922 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 129 | 161 | 200 | 153 | 159 | 79 | 30 | 20 | 12 | 34 | 72 | 109 | |
| New Hampshire | 24 | 30 | 26 | 16 | 13 | 6 | 2 | 2 | 3 | 3 | 31 | 10 | |
| Vermont | 144 | 143 | 178 | 161 | 120 | 95 | 35 | 21 | 36 | 42 | 65 | 59 | |
| Massachusetts | 753 | 793 | 1,074 | 956 | 877 | 623 | 232 | 99 | 95 | 188 | 419 | 565 | |
| Rhode Island | 18 | 27 | 29 | 26 | 14 | 10 | 7 | 4 | 2 | 6 | 18 | 17 | |
| Connecticut | 163 | 200 | 277 | 203 | 163 | 122 | 54 | 19 | 16 | 52 | 84 | 106 | |
| Total (6 States) | 1,231 | 1,354 | 1,784 | 1,515 | 1,346 | 935 | 360 | 165 | 164 | 325 | 689 | 866 | 10,734 |
| Per cent | 11.25 | 13.70 | 16.31 | 14.31 | 12.30 | 8.83 | 3.29 | 1.51 | 1.55 | 2.97 | 6.51 | 7.92 | 100 |
| New York | 1,414 | 1,681 | 2,182 | 1,904 | 1,668 | 1,255 | 524 | 234 | 203 | 359 | 765 | 1,091 | |
| New Jersey | .... | .... | .... | .... | .... | .... | .... | ... | .... | .... | .... | .... | |
| Pennsylvania | 1,290 | 1,554 | 2,040 | 1,798 | 1,369 | 856 | 357 | 131 | 158 | 348 | 715 | 1,038 | |
| Total (2 States) | 2,704 | 3,235 | 4,222 | 3,702 | 3,037 | 2,111 | 881 | 365 | 361 | 707 | 1,480 | 2,129 | 24,934 |
| Per cent | 10.64 | 14.09 | 16.61 | 15.05 | 11.95 | 8.58 | 3.47 | 1.44 | 1.47 | 2.78 | 6.02 | 8.38 | 100 |
| Ohio | 362 | 532 | 823 | 782 | 666 | 393 | 144 | 68 | 84 | 129 | 257 | 377 | |
| Indiana | 12 | 13 | 15 | 9 | 16 | 3 | 9 | 5 | 2 | 2 | 13 | 27 | |
| Illinois | 843 | 1,060 | 1,422 | 1,167 | 1,009 | 709 | 264 | 117 | 112 | 199 | 379 | 596 | |
| Michigan | 336 | 367 | 666 | 636 | 606 | 419 | 109 | 45 | 39 | 98 | 193 | 262 | |
| Wisconsin | 482 | 505 | 590 | 684 | 460 | 305 | 139 | 48 | 50 | 102 | 221 | 380 | |
| Total (5 States) | 2,035 | 2,477 | 3,516 | 3,278 | 2,757 | 1,829 | 665 | 283 | 287 | 530 | 1,063 | 1,642 | 20,362 |
| Per cent | 9.81 | 13.21 | 16.94 | 16.32 | 13.29 | 9.11 | 3.20 | 1.36 | 1.43 | 2.55 | 5.29 | 7.91 | 100 |
| Minnesota | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Iowa | 80 | 109 | 152 | 117 | 78 | 33 | 9 | 5 | 6 | 18 | 49 | 79 | |
| Missouri | 121 | 199 | 268 | 274 | 467 | 136 | 68 | 26 | 18 | 30 | 63 | 114 | |
| North Dakota | 14 | 29 | 50 | 34 | 25 | 3 | 3 | 3 | 1 | 26 | 8 | 18 | |
| South Dakota | 30 | 24 | 11 | 7 | 11 | 6 | 11 | 1 | 3 | 1 | 18 | 35 | |
| Nebraska | 64 | 97 | 122 | 91 | 76 | 37 | 24 | 11 | 6 | 20 | 22 | 50 | |
| Kansas | 182 | 251 | 245 | 252 | 155 | 66 | 39 | 26 | 23 | 32 | 51 | 119 | |
| Total (6 States) | 491 | 709 | 848 | 775 | 812 | 281 | 154 | 72 | 57 | 127 | 211 | 415 | 4,952 |
| Per cent | 9.73 | 15.55 | 16.80 | 15.87 | 16.09 | 5.75 | 3.05 | 1.43 | 1.17 | 2.52 | 4.32 | 8.22 | 100 |
| Delaware | 5 | 4 | 9 | 8 | 21 | 4 | 4 | 1 | 1 | 3 | 7 | 7 | |
| Maryland | 225 | 320 | 402 | 412 | 425 | 237 | 71 | 29 | 19 | 47 | 79 | 119 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Virginia | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| West Virginia | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| North Carolina | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| South Carolina | 23 | 56 | 87 | 65 | 25 | 21 | 3 | 4 | 4 | 8 | 13 | 27 | |
| Georgia | 71 | 119 | 140 | 188 | 142 | 53 | 28 | 16 | 16 | 26 | 28 | 30 | |
| Florida | 47 | 49 | 107 | 101 | 94 | 39 | 14 | 10 | 8 | 9 | 21 | 24 | |
| Total (5 States) | 371 | 548 | 745 | 774 | 707 | 354 | 120 | 60 | 48 | 93 | 148 | 207 | 4,175 |
| Per cent | 8.72 | 14.26 | 17.51 | 18.80 | 16.62 | 8.60 | 2.82 | 1.41 | 1.17 | 2.19 | 3.59 | 4.86 | 100 |
| Kentucky | 40 | 39 | 65 | 43 | 39 | 23 | 13 | 6 | 4 | 5 | 9 | 10 | |
| Tennessee | 26 | 33 | 47 | 82 | 62 | 17 | 9 | 3 | 7 | 5 | 1 | 15 | |
| Alabama | 164 | 141 | 161 | 192 | 147 | 69 | 42 | 22 | 25 | 42 | 38 | 72 | |
| Mississippi | 215 | 577 | 741 | 579 | 600 | 330 | 253 | 165 | 146 | 191 | 222 | 265 | |
| Total (4 States) | 445 | 790 | 1,014 | 896 | 848 | 439 | 317 | 196 | 182 | 243 | 270 | 362 | 6,002 |
| Per cent | 7.27 | 14.30 | 16.58 | 15.14 | 13.86 | 7.42 | 5.18 | 3.20 | 3.07 | 3.97 | 4.56 | 5.92 | 100 |
| Arkansas | 52 | 98 | 97 | 93 | 85 | 66 | 39 | 48 | 55 | 37 | 14 | 29 | |
| Louisiana | 6 | 13 | 35 | 26 | 20 | 8 | 2 | 1 | 2 | 2 | 5 | 3 | |
| Oklahoma | 46 | 44 | 61 | 54 | 36 | 17 | 8 | 4 | 5 | 3 | 6 | 7 | |
| Texas | 118 | 246 | 188 | 199 | 340 | 84 | 34 | 22 | 38 | 29 | 32 | 93 | |
| Total (4 States) | 222 | 401 | 381 | 372 | 481 | 175 | 83 | 75 | 100 | 71 | 57 | 132 | 2,550 |
| Per cent | 854 | 17.08 | 14.66 | 14.79 | 18.51 | 6.96 | 3.19 | 2.89 | 3.98 | 2.73 | 2.27 | 5.08 | 100 |
| Montana | 80 | 66 | 78 | 44 | 27 | 14 | 10 | 7 | 11 | 47 | 90 | 71 | |
| Idaho | 20 | 34 | 32 | 22 | 15 | 9 | 6 | 9 | 17 | 18 | 21 | 17 | |
| Wyoming | 19 | 21 | 41 | 43 | 26 | 10 | 4 | 13 | 6 | 7 | 8 | 6 | |
| Colorado | 114 | 78 | 158 | 159 | 140 | 61 | 36 | 1 | 7 | 20 | 27 | 48 | |
| New Mexico | 37 | 63 | 70 | 57 | 45 | 13 | 6 | 6 | 8 | 8 | 7 | 14 | |
| Arizona | 23 | 28 | 25 | 24 | 31 | 10 | 5 | 2 | 4 | 12 | 29 | 29 | |
| Utah | 46 | 76 | 78 | 82 | 37 | 51 | 10 | 8 | 6 | 8 | 21 | 23 | |
| Nevada | 1 | 4 | 5 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | |
| Total (8 States) | 340 | 370 | 487 | 432 | 322 | 169 | 78 | 46 | 59 | 121 | 203 | 208 | 2,835 |
| Per cent | 11.77 | 14.18 | 16.86 | 15.45 | 11.14 | 6.04 | 2.70 | 1.59 | 2.11 | 4.19 | 7.26 | 7.20 | 100 |
| Washington | 314 | 368 | 385 | 289 | 218 | 133 | 69 | 31 | 46 | 81 | 146 | 194 | |
| Oregon | 82 | 81 | 82 | 101 | 61 | 41 | 24 | 13 | 20 | 37 | 39 | 50 | |
| California | 527 | 626 | 922 | 819 | 750 | 489 | 167 | 119 | 200 | 277 | 388 | 428 | |
| Total (3 States) | 923 | 1,075 | 1,389 | 1,209 | 1,029 | 663 | 260 | 163 | 266 | 395 | 573 | 672 | 8,617 |
| Per cent | 10.51 | 13.55 | 15.82 | 14.23 | 11.72 | 7.80 | 2.96 | 1.86 | 3.13 | 4.50 | 6.74 | 7.65 | 100 |
| Total (43 States) | 8,762 | 10,959 | 14,386 | 12,953 | 11,339 | 6,956 | 2,918 | 1,425 | 1,524 | 2,612 | 4,694 | 6,633 | 85,161 |
| Per cent | 10.09 | 13.98 | 16.57 | 15.43 | 13.06 | 8.28 | 3.36 | 1.64 | 1.82 | 3.01 | 5.59 | 7.64 | 100 |

## POLIOMYELITIS

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1921 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 1 | 1 | 1 | .... | 1 | 1 | .... | 4 | 3 | 3 | 3 | 1 | |
| New Hampshire | .... | .... | .... | 1 | .... | .... | .... | 2 | 4 | 2 | .... | .... | |
| Vermont | .... | .... | .... | .... | .... | .... | 3 | 3 | 7 | 11 | 3 | 1 | |
| Massachusetts | 9 | 4 | 5 | 4 | 4 | 4 | 21 | 54 | 59 | 31 | 23 | 12 | |
| Rhode Island | .... | .... | .... | .... | .... | 1 | 2 | 2 | 6 | 3 | 1 | 1 | |
| Connecticut | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 18 | 18 | 13 | 5 | 2 | |
| Total (6 States) | 11 | 6 | 7 | 6 | 6 | 7 | 34 | 83 | 97 | 63 | 35 | 17 | 372 |
| Per cent | 2.90 | 1.75 | 1.85 | 1.64 | 1.58 | 1.91 | 8.97 | 21.89 | 26.44 | 16.62 | 9.54 | 4.48 | 100 |
| New York | 14 | 8 | 9 | 8 | 8 | 14 | 68 | 231 | 198 | 169 | 70 | 33 | |
| New Jersey | 3 | 2 | 3 | 3 | 3 | 3 | 13 | 35 | 21 | 16 | 11 | 5 | |
| Pennsylvania | 4 | 2 | 3 | 2 | 3 | 3 | 9 | 43 | 49 | 31 | 12 | 6 | |
| Total (3 States) | 21 | 12 | 15 | 13 | 14 | 20 | 90 | 309 | 268 | 216 | 93 | 44 | 1,115 |
| Per cent | 1.85 | 1.17 | 1.32 | 1.18 | 1.23 | 1.82 | 7.92 | 27.19 | 24.37 | 19.01 | 8.46 | 3.87 | 100 |
| Ohio | 4 | 2 | 2 | 2 | 2 | 4 | 13 | 36 | 35 | 33 | 9 | 7 | |
| Indiana | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 9 | 8 | 11 | 4 | 3 | |
| Illinois | 5 | 7 | 5 | 3 | 5 | 6 | 16 | 37 | 66 | 61 | 17 | 10 | |
| Michigan | 3 | 2 | 3 | 2 | 1 | 3 | 7 | 16 | 27 | 34 | 13 | 5 | |
| Wisconsin | 3 | 3 | 2 | 1 | 3 | 2 | 5 | 13 | 24 | 22 | 15 | 3 | |
| Total (5 States) | 17 | 16 | 13 | 9 | 12 | 16 | 44 | 111 | 160 | 161 | 58 | 28 | 645 |
| Per cent | 2.59 | 2.69 | 1.98 | 1.41 | 1.83 | 2.52 | 6.69 | 16.89 | 25.15 | 24.49 | 9.12 | 4.26 | 100 |
| Minnesota | 1 | .... | 2 | 1 | 2 | 3 | 10 | 20 | 30 | 41 | 16 | 5 | |
| Iowa | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 20 | 10 | 9 | 5 | |
| Missouri | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 6 | 6 | 4 | 3 | |
| North Dakota | 1 | .... | 1 | .... | .... | .... | .... | 4 | 4 | 4 | 4 | 2 | |
| South Dakota | .... | .... | 1 | 1 | 1 | .... | 2 | 3 | 6 | 5 | 4 | 1 | |
| Nebraska | .... | .... | 1 | 1 | .... | 1 | 1 | 6 | 9 | 18 | 6 | 2 | |
| Kansas | 2 | 1 | 2 | .... | 1 | 1 | 6 | 13 | 22 | 18 | 6 | 3 | |
| Total (7 States) | 6 | 3 | 9 | 5 | 6 | 7 | 27 | 54 | 97 | 102 | 49 | 21 | 386 |
| Per cent | 1.53 | .84 | 2.29 | 1.31 | 1.53 | 1.84 | 6.86 | 13.73 | 25.48 | 25.93 | 12.87 | 5.34 | 100 |
| Delaware | .... | .... | .... | .... | .... | 1 | .... | 1 | 1 | .... | .... | .... | |
| Maryland | 2 | 2 | 1 | 2 | 2 | 2 | 6 | 5 | 11 | 11 | 6 | 2 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | .... | .... | .... | .... | .... | .... | 1 | 1 | 3 | 7 | 1 | .... | |
| Virginia | 3 | 4 | 4 | 2 | 4 | 6 | 18 | 18 | 11 | 14 | 7 | 3 | |
| West Virginia | .... | 1 | 1 | .... | 1 | 1 | 4 | 10 | 2 | 2 | .... | 1 | |
| North Carolina | 1 | 2 | 1 | 1 | 1 | 2 | 4 | 6 | 4 | 3 | 3 | 1 | |
| South Carolina | 6 | 8 | 2 | 3 | 4 | 4 | 4 | 3 | 7 | 7 | 5 | 5 | |
| Georgia | 1 | 1 | .... | .... | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | |
| Florida | .... | .... | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | |
| Total (8 States) | 13 | 18 | 10 | 9 | 14 | 19 | 42 | 47 | 42 | 46 | 24 | 14 | 298 |
| Per cent | 4.28 | 6.56 | 3.29 | 3.06 | 4.61 | 6.46 | 13.83 | 15.48 | 14.29 | 15.15 | 8.17 | 4.61 | 100 |
| Kentucky | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Tennessee | 1 | 2 | 1 | 1 | .... | 2 | 3 | 4 | 7 | 4 | 1 | 1 | |
| Alabama | 2 | 1 | 2 | 1 | 3 | 4 | 7 | 7 | 3 | 3 | 2 | 3 | |
| Mississippi | 1 | 1 | 2 | 3 | 4 | 4 | 4 | 5 | 3 | 4 | 4 | 3 | |
| Total (3 States) | 4 | 4 | 5 | 5 | 7 | 10 | 14 | 16 | 13 | 11 | 7 | 7 | 103 |
| Per cent | 3.81 | 4.22 | 4.76 | 4.92 | 6.67 | 9.84 | 13.34 | 15.24 | 12.80 | 10.48 | 6.89 | 6.67 | 100 |
| Arkansas | .... | 1 | .... | .... | .... | .... | .... | 4 | 4 | 4 | 1 | .... | |
| Louisiana | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 3 | 4 | 3 | 2 | 1 | |
| Oklahoma | 3 | 3 | .... | 1 | .... | 4 | 6 | 2 | 7 | 9 | 5 | 4 | |
| Texas | 6 | 1 | .... | .... | 2 | 6 | 8 | 6 | 6 | 4 | 4 | 9 | |
| Total (4 States) | 10 | 6 | 2 | 2 | 4 | 12 | 16 | 15 | 21 | 20 | 12 | 14 | 134 |
| Per cent | 7.32 | 4.86 | 1.46 | 1.51 | 2.93 | 9.08 | 11,72 | 10.98 | 15.89 | 14.64 | 9.08 | 10.25 | 100 |
| Montana | .... | .... | .... | .... | .... | .... | 2 | 5 | 7 | 5 | 2 | 1 | |
| Idaho | .... | .... | .... | .... | .... | .... | 1 | 1 | 4 | 6 | 4 | 1 | |
| Wyoming | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 2 | .... | .... | |
| Colorado | .... | .... | 1 | .... | 1 | .... | .... | 2 | 3 | 2 | 1 | 1 | |
| New Mexico | .... | .... | .... | .... | .... | .... | 1 | 1 | 1 | 1 | .... | 1 | |
| Arizona | .... | .... | .... | .... | .... | 1 | 1 | 1 | 1 | 1 | 1 | .... | |
| Utah | .... | .... | .... | .... | .... | .... | 1 | 2 | 3 | 2 | 1 | .... | |
| Nevada | 2 | .... | .... | .... | 1 | 2 | .... | 1 | .... | 2 | .... | 1 | |
| Total (8 States) | 2 | .... | 1 | .... | 2 | 3 | 6 | 14 | 19 | 21 | 9 | 5 | 82 |
| Per cent | 2.39 | 0.00 | 1.20 | 0.00 | 2.39 | 3.71 | 7.18 | 16.75 | 23.49 | 25.13 | 11.13 | 5.98 | 100 |
| Washington 1 | 1 | 1 | 1 | .... | 1 | 1 | 1 | 10 | 5 | 3 | 1 | 1 | |
| Oregon | .... | 1 | .... | .... | .... | .... | .... | .... | 5 | 8 | 2 | 1 | |
| California | 8 | 4 | 7 | 4 | 8 | 13 | 17 | 23 | 40 | 51 | 39 | 24 | |
| Total (3 States) | 9 | 6 | 8 | 4 | 9 | 14 | 18 | 33 | 50 | 62 | 42 | 26 | 281 |
| Per cent | 3.14 | 2.32 | 2.79 | 1.44 | 3.14 | 5.05 | 6.29 | 11.52 | 18.04 | 21.65 | 15.15 | 9.08 | 100 |
| Total (47 States) | **93** | **71** | **70** | **53** | **74** | 108 | 291 | 682 | 767 | 702 | 329 | 176 | 3,416 |
| Per cent | **2.67** | **2.26** | **2.01** | **1.57** | **2.13** | 3.21 | 8.36 | 19.59 | 22.77 | 20.16 | 9.76 | 5.06 | 100 |

## SCARLET FEVER

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Correct Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1921 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 147 | 108 | 124 | 129 | 127 | 89 | 70 | 62 | 57 | 114 | 161 | 163 | |
| New Hampshire | 66 | 60 | 61 | 65 | 36 | 43 | 13 | 15 | 23 | 39 | 66 | 65 | |
| Vermont | 91 | 83 | 69 | 68 | 57 | 38 | 35 | 16 | 39 | 33 | 90 | 73 | |
| Massachusetts | 1,289 | 1,300 | 1,566 | 1,148 | 996 | 911 | 381 | 237 | 312 | 677 | 937 | 1,217 | |
| Rhode Island | 100 | 114 | 117 | 101 | 77 | 37 | 28 | 15 | 22 | 41 | 90 | 82 | |
| Connecticut | 459 | 437 | 538 | 397 | 348 | 230 | 115 | 71 | 91 | 186 | 301 | 413 | |
| Total (6 States) | 2,152 | 2,102 | 2,475 | 1,908 | 1,641 | 1,348 | 642 | 416 | 544 | 1,090 | 1,645 | 2,013 | 17,976 |
| Per cent | 11.75 | 12.70 | 13.51 | 10.76 | 8.96 | 7.60 | 3.51 | 2.27 | 3.07 | 5.95 | 9.28 | 10.99 | 100 |
| New York | 2,763 | 2,859 | 3,131 | 2,770 | 2,347 | 1,576 | 686 | 380 | 448 | 849 | 1,467 | 2,042 | |
| New Jersey | 1,279 | 1,282 | 1,238 | 995 | 941 | 523 | 208 | 123 | 175 | 330 | 563 | 732 | |
| Pennsylvania | 2,477 | 2,396 | 2,464 | 2,207 | 1,823 | 1,184 | 540 | 416 | 722 | 1,389 | 1,866 | 2,167 | |
| Total (3 States) | 6,519 | 6,537 | 6,833 | 5,972 | 5,111 | 3,283 | 1,434 | 919 | 1,345 | 2,568 | 3,896 | 4,941 | 49,358 |
| Per cent | 12.97 | 14.38 | 13.60 | 12.24 | 10.17 | 6.73 | 2.85 | 1.83 | 2.76 | 5.11 | 7.99 | 9.83 | 100 |
| Ohio | 1,946 | 1,766 | 1,742 | 1,419 | 1,279 | 750 | 374 | 301 | 554 | 1,186 | 1,467 | 1,620 | |
| Indiana | 927 | 892 | 914 | 856 | 472 | 276 | 129 | 103 | 161 | 444 | 563 | 532 | |
| Illinois | 1,847 | 1,817 | 1,626 | 1,148 | 1,043 | 780 | 351 | 297 | 400 | 816 | 1,124 | 1,314 | |
| Michigan | 1,452 | 1,424 | 1,639 | 1,356 | 1,128 | 921 | 435 | 313 | 489 | 833 | 1,018 | 1,227 | |
| Wisconsin | 934 | 929 | 764 | 804 | 589 | 422 | 275 | 173 | 266 | 462 | 606 | 740 | |
| Total (5 States) | 7,106 | 6,828 | 6,685 | 5,583 | 4,511 | 3,149 | 1,564 | 1,187 | 1,870 | 3,741 | 4,778 | 5,433 | 52,435 |
| Per cent | 13.29 | 14.13 | 12.50 | 10.78 | 8.44 | 6.08 | 2.92 | 2.22 | 3.61 | 7.00 | 9.22 | 10.16 | 100 |
| Minnesota | 1,246 | 1,018 | 1,112 | 824 | 765 | 477 | 336 | 296 | 416 | 708 | 862 | 1,068 | |
| Iowa | 310 | 339 | 287 | 207 | 133 | 114 | 61 | 48 | 73 | 177 | 227 | 314 | |
| Missouri | 738 | 780 | 720 | 621 | 521 | 257 | 134 | 143 | 211 | 481 | 580 | 637 | |
| North Dakota | 225 | 231 | 273 | 131 | 120 | 67 | 49 | 62 | 66 | 134 | 193 | 215 | |
| South Dakota | 332 | 214 | 213 | 199 | 148 | 78 | 58 | 53 | 108 | 160 | 194 | 205 | |
| Nebraska | 256 | 203 | 203 | 139 | 108 | 56 | 33 | 39 | 60 | 168 | 148 | 204 | |
| Kansas | 601 | 483 | 346 | 290 | 218 | 122 | 100 | 132 | 211 | 394 | 445 | 492 | |
| Total (7 States) | 3,708 | 3,268 | 3,154 | 2,411 | 2,013 | 1,171 | 771 | 773 | 1,145 | 2,222 | 2,649 | 3,135 | 26,420 |
| Per cent | 13.76 | 13.43 | 11.70 | 9.26 | 7.47 | 4.50 | 2.86 | 2.87 | 4.40 | 8.24 | 10.17 | 11.63 | 100 |
| Delaware | 61 | 52 | 57 | 39 | 40 | 21 | 10 | 7 | 17 | 42 | 67 | 79 | |
| Maryland | 397 | 343 | 366 | 285 | 247 | 227 | 78 | 46 | 71 | 178 | 223 | 329 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | 130 | 103 | 125 | 102 | 92 | 56 | 21 | 17 | 26 | 59 | 92 | 95 | |
| Virginia | 354 | 239 | 214 | 166 | 117 | 71 | 79 | 110 | 223 | 368 | 428 | 384 | |
| West Virginia | 242 | 145 | 158 | 170 | 137 | 88 | 70 | 84 | 167 | 344 | 315 | 271 | |
| North Carolina | 245 | 149 | 117 | 87 | 78 | 76 | 65 | 108 | 257 | 535 | 460 | 295 | |
| South Carolina | 37 | 17 | 19 | 14 | 18 | 10 | 14 | 20 | 34 | 68 | 73 | 43 | |
| Georgia | 41 | 37 | 48 | 33 | 31 | 22 | 26 | 23 | 37 | 59 | 74 | 48 | |
| Florida | 21 | 22 | 17 | 18 | 7 | 10 | 4 | 10 | 5 | 12 | 17 | 18 | |
| Total (8 States) | 1,528 | 1,107 | 1,121 | 914 | 767 | 581 | 367 | 425 | 837 | 1,665 | 1,749 | 1,562 | 12,623 |
| Per cent | 11.87 | 9.53 | 8.71 | 7.34 | 5.96 | 4.67 | 2.85 | 3.30 | 6.72 | 12.94 | 14.04 | 12.14 | 100 |
| Kentucky | 161 | 125 | 88 | 98 | 81 | 42 | 26 | 40 | 58 | 115 | 161 | 137 | |
| Tennessee | 95 | 100 | 77 | 121 | 81 | 36 | 31 | 62 | 128 | 196 | 168 | 186 | |
| Alabama | 98 | 61 | 34 | 41 | 27 | 24 | 36 | 59 | 78 | 130 | 115 | 74 | |
| Mississippi | 65 | 33 | 28 | 27 | 29 | 20 | 25 | 40 | 63 | 88 | 88 | 88 | |
| Total (4 States) | 419 | 319 | 227 | 287 | 218 | 122 | 118 | 201 | 327 | 529 | 532 | 485 | 3,784 |
| Per cent | 10.86 | 9.16 | 5.89 | 7.69 | 5.65 | 3.27 | 3.06 | 5.21 | 8.76 | 13.72 | 14.25 | 12.58 | 100 |
| Arkansas | 36 | 40 | 30 | 19 | 15 | 15 | 11 | 16 | 26 | 48 | 64 | 51 | |
| Louisiana | 46 | 49 | 41 | 41 | 23 | 15 | 18 | 17 | 16 | 34 | 58 | 57 | |
| Oklahoma | 59 | 41 | 97 | 42 | 37 | 34 | 24 | 29 | 47 | 86 | 135 | 162 | |
| Texas | 113 | 103 | 87 | 73 | 75 | 44 | 38 | 37 | 51 | 81 | 139 | 202 | |
| Total (4 States) | 254 | 233 | 255 | 175 | 150 | 108 | 91 | 99 | 140 | 249 | 396 | 472 | 2,622 |
| Per cent | 9.50 | 9.65 | 9.54 | 6.77 | 5.61 | 4.18 | 3.41 | 3.70 | 5.41 | 9.32 | 15.31 | 17.66 | 100 |
| Montana | 147 | 122 | 107 | 75 | 102 | 39 | 41 | 30 | 35 | 65 | 105 | 133 | |
| Idaho | 66 | 56 | 31 | 29 | 22 | 12 | 16 | 12 | 17 | 49 | 93 | 46 | |
| Wyoming | 37 | 41 | 29 | 21 | 40 | 13 | 7 | 10 | 13 | 28 | 38 | 33 | |
| Colorado | 212 | 149 | 187 | 143 | 164 | 86 | 51 | 45 | 58 | 143 | 206 | 219 | |
| New Mexico | 57 | 48 | 46 | 33 | 41 | 13 | 6 | 8 | 15 | 37 | 42 | 42 | |
| Arizona | 29 | 24 | 36 | 42 | 37 | 30 | 9 | 8 | 13 | 25 | 39 | 39 | |
| Utah | 136 | 68 | 79 | 77 | 45 | 49 | 20 | 30 | 31 | 98 | 94 | 113 | |
| Nevada | 8 | 4 | 7 | 5 | 5 | 4 | 1 | 2 | 4 | 8 | 2 | 7 | |
| Total (8 States) | 692 | 512 | 522 | 425 | 456 | 246 | 151 | 145 | 186 | 453 | 619 | 632 | 5,039 |
| Per cent | 13.47 | 11.04 | 10.16 | 8.55 | 8.88 | 4.95 | 2.94 | 2.82 | 3.74 | 8.82 | 12.45 | 12.31 | 100 |
| Washington | 300 | 227 | 218 | 214 | 127 | 112 | 75 | 61 | 111 | 178 | 210 | 222 | |
| Oregon | 144 | 112 | 75 | 103 | 86 | 52 | 34 | 31 | 57 | 91 | 102 | 135 | |
| California | 730 | 673 | 801 | 619 | 581 | 517 | 254 | 193 | 238 | 485 | 847 | 728 | |
| Total (3 States) | 1,174 | 1,012 | 1,094 | 936 | 794 | 681 | 363 | 285 | 406 | 754 | 1,159 | 1,085 | 9,743 |
| Per cent | 11.82 | 11.28 | 11.02 | 9.74 | 8.00 | 7.09 | 3.66 | 2.87 | 4.23 | 7.59 | 12.07 | 10.93 | 100 |
| Total (48 States) | 23,552 | 21,918 | 22,366 | 18,611 | 15,661 | 10,689 | 5,501 | 4,450 | 6,800 | 13,271 | 17,423 | 19,758 | 180,000 |
| Per cent | 12.84 | 13.23 | 12.19 | 10.48 | 8.54 | 6.02 | 3.00 | 2.43 | 3.83 | 7.23 | 9.81 | 10.77 | 100 |

## SMALLPOX

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases, and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1921 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 1 | .... | .... | 2 | .... | .... | 2 | .... | .... | .... | .... | .... | |
| New Hampshire | 1 | .... | 1 | 1 | 1 | 1 | 1 | .... | .... | .... | .... | .... | |
| Vermont | .... | 7 | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | |
| Massachusetts | 1 | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | |
| Rhode Island | .... | .... | .... | 1 | 1 | .... | 1 | .... | 1 | 1 | .... | .... | |
| Connecticut | 2 | .... | 1 | 2 | 1 | 2 | .... | .... | .... | .... | .... | .... | |
| Total (6 States) | 5 | 7 | 3 | 7 | 4 | 4 | 4 | 0 | 1 | 1 | 0 | 0 | 36 |
| Per cent | 13.63 | 21.12 | 8.18 | 19.71 | 10.90 | 11.27 | 10.90 | .00 | 2.82 | 2.73 | .00 | .00 | 100 |
| New York | 55 | 43 | 38 | 14 | 31 | 39 | 28 | 12 | 9 | 17 | 22 | 50 | |
| New Jersey | 7 | 3 | 5 | 1 | 2 | 3 | 3 | .... | .... | .... | .... | 3 | |
| Pennsylvania | 18 | 11 | 12 | 18 | 14 | 14 | 11 | 1 | .... | 1 | 2 | 6 | |
| Total (3 States) | 80 | 57 | 55 | 33 | 47 | 56 | 42 | 13 | 9 | 18 | 24 | 59 | 493 |
| Per cent | 15.92 | 12.56 | 10.95 | 6.79 | 9.35 | 11.52 | 8.36 | 2.59 | 1.85 | 3.58 | 4.94 | 11.74 | 100 |
| Ohio | 463 | 371 | 438 | 427 | 314 | 197 | 109 | 46 | 40 | 65 | 137 | 247 | |
| Indiana | 495 | 419 | 441 | 445 | 367 | 266 | 118 | 73 | 26 | 53 | 153 | 232 | |
| Illinois | 210 | 163 | 212 | 164 | 150 | 128 | 95 | 30 | 23 | 39 | 76 | 133 | |
| Michigan | 175 | 155 | 143 | 130 | 129 | 117 | 94 | 51 | 44 | 39 | 90 | 118 | |
| Wisconsin | 104 | 95 | 119 | 135 | 147 | 102 | 79 | 35 | 31 | 52 | 68 | 110 | |
| Total (5 States) | 1,447 | 1,203 | 1,353 | 1,301 | 1,107 | 810 | 495 | 235 | 164 | 248 | 524 | 840 | 9,727 |
| Per cent | 14.60 | 13.44 | 13.65 | 13.56 | 11.17 | 8.44 | 4.99 | 2.37 | 1.71 | 2.50 | 5.46 | 8.47 | 100 |
| Minnesota | 362 | 271 | 211 | 137 | 123 | 89 | 81 | 46 | 34 | 79 | 121 | 186 | |
| Iowa | 158 | 87 | 116 | 71 | 110 | 91 | 22 | 18 | 13 | 29 | 43 | 90 | |
| Missouri | 89 | 73 | 140 | 64 | 70 | 56 | 34 | 11 | 17 | 20 | 78 | 68 | |
| North Dakota | 50 | 38 | 38 | 36 | 26 | 19 | 17 | 13 | 10 | 23 | 35 | 52 | |
| South Dakota | 45 | 40 | 47 | 42 | 17 | 25 | 14 | 5 | 13 | 25 | 32 | 42 | |
| Nebraska | 87 | 99 | 92 | 99 | 46 | 38 | 29 | 10 | 5 | 10 | 33 | 78 | |
| Kansas | 39 | 54 | 63 | 60 | 74 | 47 | 21 | 10 | 5 | 14 | 28 | 35 | |
| Total (7 States) | 830 | 662 | 707 | 509 | 466 | 365 | 218 | 113 | 97 | 200 | 370 | 551 | 5,088 |
| Per cent | 16.01 | 14.13 | 13.63 | 10.14 | 8.99 | 7.27 | 4.20 | 2.18 | 1.93 | 3.86 | 7.37 | 10.63 | 100 |
| Delaware | .... | 1 | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | .... | |
| Maryland | 1 | 1 | 2 | 5 | .... | 4 | 1 | .... | .... | .... | .... | .... | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | 3 | 5 | 7 | 5 | 9 | 2 | 1 | 2 | .... | .... | .... | .... | |
| Virginia | 92 | 46 | 75 | 61 | 76 | 61 | 27 | 11 | 6 | 11 | 19 | 25 | |
| West Virginia | 35 | 48 | 73 | 73 | 36 | 38 | 29 | 11 | 9 | 7 | 13 | 12 | |
| North Carolina | 311 | 329 | 306 | 350 | 253 | 143 | 67 | 57 | 43 | 41 | 90 | 152 | |
| South Carolina | 55 | 67 | 80 | 73 | 67 | 35 | 14 | 8 | 7 | 14 | 25 | 20 | |
| Georgia | 99 | 252 | 124 | 109 | 128 | 68 | 61 | 21 | 7 | 17 | 19 | 49 | |
| Florida | 52 | 41 | 77 | 46 | 26 | 28 | 16 | 8 | 7 | 1 | 8 | 20 | |
| Total (8 States) | 648 | 790 | 744 | 722 | 596 | 379 | 217 | 118 | 79 | 91 | 174 | 278 | 4,836 |
| Per cent | 13.15 | 17.75 | 15.10 | 15.14 | 12.09 | 7.95 | 4.40 | 2.39 | 1.66 | 1.85 | 3.65 | 5.64 | 100 |
| Kentucky | 52 | 49 | 54 | 55 | 39 | 30 | 28 | 27 | 7 | 14 | 20 | 49 | |
| Tennessee | 119 | 102 | 123 | 220 | 179 | 62 | 31 | 25 | 15 | 25 | 28 | 63 | |
| Alabama | 157 | 148 | 197 | 239 | 186 | 123 | 66 | 25 | 15 | 9 | 26 | 64 | |
| Mississippi | 129 | 102 | 98 | 111 | 58 | 35 | 21 | 10 | 11 | 23 | 39 | 82 | |
| Total (4 States) | 457 | 401 | 472 | 625 | 462 | 250 | 146 | 87 | 48 | 71 | 113 | 258 | 3,390 |
| Per cent | 13.23 | 12.85 | 13.66 | 18.69 | 13.37 | 7.48 | 4.23 | 2.52 | 1.44 | 2.05 | 3.38 | 7.47 | 100 |
| Arkansas | 30 | 24 | 35 | 30 | 35 | 23 | 11 | 11 | 3 | 3 | 11 | 12 | |
| Louisiana | 86 | 100 | 129 | 88 | 79 | 30 | 13 | 12 | 9 | 11 | 24 | 36 | |
| Oklahoma | 131 | 166 | 190 | 163 | 114 | 90 | 30 | 5 | 7 | 34 | 35 | 59 | |
| Texas | 157 | 271 | 213 | 287 | 242 | 115 | 58 | 39 | 13 | 13 | 15 | 57 | |
| Total (4 States) | 404 | 561 | 567 | 568 | 470 | 258 | 112 | 67 | 32 | 61 | 85 | 164 | 3,349 |
| Per cent | 11.84 | 18.20 | 16.61 | 17.20 | 13.77 | 7.81 | 3.28 | 1.96 | .97 | 1.79 | 2.57 | 4.80 | 100 |
| Montana | 97 | 62 | 84 | 53 | 34 | 25 | 21 | 12 | 20 | 42 | 75 | 83 | |
| Idaho | 51 | 37 | 61 | 52 | 49 | 41 | 18 | 10 | 10 | 11 | 22 | 32 | |
| Wyoming | 6 | 4 | 6 | 2 | 6 | 4 | 2 | .... | 2 | 3 | 12 | 10 | |
| Colorado | 13 | 7 | 11 | 4 | 7 | 4 | 6 | 1 | 3 | 3 | 11 | 4 | |
| New Mexico | 7 | 7 | 10 | 8 | 9 | 1 | 1 | .... | .... | .... | 1 | 3 | |
| Arizona | 14 | 16 | 6 | 5 | 10 | 4 | 3 | 1 | .... | 1 | .... | 2 | |
| Utah | 40 | 29 | 22 | 14 | 38 | 8 | 15 | 2 | 9 | 17 | 31 | 39 | |
| Nevada | 5 | 22 | 5 | 8 | 1 | 1 | 1 | .... | 1 | .... | 1 | 1 | |
| Total (8 States) | 233 | 184 | 205 | 146 | 154 | 88 | 67 | 26 | 45 | 77 | 153 | 174 | 1,552 |
| Per cent | 14.73 | 12.88 | 12.96 | 9.54 | 9.74 | 5.75 | 4.24 | 1.64 | 2.94 | 4.87 | 10.00 | 11.00 | 100 |
| Washington | 384 | 262 | 242 | 204 | 192 | 115 | 114 | 64 | 52 | 71 | 104 | 245 | |
| Oregon | 176 | 130 | 117 | 107 | 76 | 70 | 56 | 37 | 24 | 75 | 80 | 94 | |
| California | 606 | 657 | 653 | 337 | 176 | 170 | 135 | 119 | 39 | 113 | 194 | 278 | |
| Total (3 States) | 1,166 | 1,049 | 1,012 | 648 | 444 | 355 | 305 | 220 | 115 | 259 | 378 | 617 | 6,568 |
| Per cent | 17.42 | 17.35 | 15.12 | 10.00 | 6.63 | 5.48 | 4.56 | 3.29 | 1.78 | 3.87 | 5.84 | 9.22 | 100 |
| Total (48 States) | 5,270 | 4,914 | 5,118 | 4,559 | 3,750 | 2,565 | 1,606 | 879 | 590 | 1,026 | 1,821 | 2,941 | 35,039 |
| Per cent | 14.76 | 15.23 | 14.33 | 13.19 | 10.50 | 7.42 | 4.50 | 2.46 | 1.71 | 2.87 | 5.27 | 8.24 | 100 |

## TYPHOID FEVER

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1921 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 11 | 12 | 11 | 13 | 10 | 12 | 15 | 32 | 33 | 32 | 19 | 17 | |
| New Hampshire | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 6 | 2 | 1 | |
| Vermont | 5 | 3 | 2 | 3 | 1 | 2 | 3 | 5 | 7 | 7 | 2 | 5 | |
| Massachusetts | 36 | 31 | 41 | 30 | 37 | 36 | 58 | 69 | 82 | 80 | 43 | 40 | |
| Rhode Island | 5 | 1 | 2 | 3 | 2 | 2 | 4 | 11 | 13 | 6 | 8 | 6 | |
| Connecticut | 9 | 7 | 11 | 7 | 12 | 12 | 24 | 45 | 36 | 41 | 18 | 17 | |
| Total (6 States) | 68 | 55 | 69 | 58 | 64 | 65 | 105 | 164 | 174 | 172 | 92 | 86 | 1,172 |
| Per cent | 5.69 | 5.10 | 5.78 | 5.02 | 5.36 | 5.62 | 8.79 | 13.73 | 15.05 | 14.40 | 7.96 | 7.20 | 100 |
| New York | 168 | 82 | 94 | 110 | 121 | 124 | 202 | 356 | 408 | 303 | 205 | 175 | |
| New Jersey | 32 | 22 | 27 | 27 | 25 | 39 | 61 | 101 | 112 | 108 | 70 | 50 | |
| Pennsylvania | 108 | 103 | 81 | 87 | 96 | 144 | 182 | 321 | 411 | 392 | 220 | 164 | |
| Total (3 States) | 308 | 207 | 202 | 224 | 242 | 307 | 445 | 778 | 931 | 803 | 495 | 389 | 5,331 |
| Per cent | 5.67 | 4.22 | 3.72 | 4.26 | 4.45 | 5.84 | 8.19 | 14.32 | 17.71 | 14.78 | 9.41 | 7.16 | 100 |
| Ohio | 67 | 47 | 46 | 45 | 59 | 80 | 155 | 320 | 436 | 302 | 159 | 88 | |
| Indiana | 28 | 20 | 19 | 23 | 20 | 33 | 65 | 85 | 139 | 124 | 72 | 50 | |
| Illinois | 111 | 71 | 62 | 57 | 63 | 70 | 141 | 233 | 290 | 273 | 185 | 115 | |
| Michigan | 54 | 31 | 51 | 41 | 35 | 44 | 69 | 99 | 153 | 156 | 92 | 62 | |
| Wisconsin | 23 | 16 | 19 | 23 | 22 | 14 | 19 | 28 | 43 | 46 | 40 | 20 | |
| Total (5 States) | 283 | 185 | 197 | 189 | 199 | 241 | 449 | 765 | 1,061 | 901 | 548 | 335 | 5,353 |
| Per cent | 5.19 | 3.75 | 3.61 | 3.58 | 3.65 | 4.56 | 8.23 | 14.02 | 20.10 | 16.52 | 10.38 | 6.14 | 100 |
| Minnesota | 21 | 21 | 25 | 19 | 21 | 20 | 34 | 43 | 51 | 57 | 25 | 25 | |
| Iowa | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |
| Missouri | 21 | 17 | 16 | 19 | 34 | 36 | 115 | 163 | 157 | 139 | 85 | 32 | |
| North Dakota | 6 | 5 | 3 | 6 | 2 | 1 | 5 | 7 | 11 | 16 | 6 | 4 | |
| South Dakota | 8 | 7 | 5 | 2 | 3 | 6 | 10 | 16 | 18 | 18 | 12 | 7 | |
| Nebraska | 7 | 5 | 3 | 3 | 4 | 3 | 11 | 15 | 13 | 10 | 12 | 10 | |
| Kansas | 14 | 11 | 10 | 14 | 18 | 41 | 113 | 167 | 135 | 84 | 48 | 19 | |
| Total (6 States) | 77 | 66 | 62 | 63 | 82 | 107 | 288 | 411 | 385 | 324 | 188 | 97 | 2,150 |
| Per cent | 3.51 | 3.33 | 2.83 | 2.97 | 3.74 | 5.05 | 13.14 | 18.76 | 18.16 | 14.79 | 8.87 | 4.43 | 100 |
| Delaware | 4 | 2 | 1 | 1 | 2 | 4 | 6 | 17 | 17 | 18 | 10 | 5 | |
| Maryland | 41 | 26 | 29 | 28 | 32 | 54 | 109 | 264 | 223 | 199 | 113 | 64 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | 5 | 4 | 6 | 3 | 6 | 8 | 11 | 18 | 24 | 16 | 9 | 8 | |
| Virginia | 48 | 28 | 38 | 50 | 76 | 172 | 388 | 369 | 261 | 217 | 123 | 63 | |
| West Virginia | 63 | 62 | 40 | 40 | 41 | 46 | 111 | 164 | 212 | 295 | 93 | 91 | |
| North Carolina | 22 | 20 | 21 | 25 | 54 | 151 | 352 | 342 | 208 | 131 | 61 | 29 | |
| South Carolina | 22 | 21 | 16 | 21 | 58 | 181 | 255 | 211 | 154 | 119 | 52 | 34 | |
| Georgia | 28 | 25 | 16 | 28 | 64 | 152 | 283 | 254 | 226 | 137 | 56 | 34 | |
| Florida | 55 | 42 | 44 | 76 | 66 | 67 | 61 | 63 | 40 | 40 | 31 | 40 | |
| Total (8 States) | 288 | 230 | 211 | 272 | 399 | 835 | 1,576 | 1,702 | 1,365 | 1,172 | 548 | 368 | 8,966 |
| Per cent | 3.15 | 2.79 | 2.31 | 3.08 | 4.37 | 9.44 | 17.25 | 18.62 | 15.44 | 12.83 | 6.20 | 4.03 | 100 |
| Kentucky | 46 | 23 | 26 | 24 | 31 | 36 | 122 | 187 | 155 | 129 | 93 | 63 | |
| Tennessee | 31 | 28 | 15 | 25 | 51 | 142 | 324 | 388 | 254 | 275 | 102 | 90 | |
| Alabama | 50 | 50 | 51 | 44 | 97 | 169 | 356 | 479 | 273 | 178 | 100 | 78 | |
| Mississippi | 100 | 80 | 70 | 84 | 140 | 264 | 448 | 332 | 301 | 288 | 139 | 80 | |
| Total (4 States) | 227 | 181 | 162 | 177 | 319 | 611 | 1,250 | 1,386 | 983 | 870 | 434 | 311 | 6,911 |
| Per cent | 3.22 | 2.85 | 2.30 | 2.60 | 4.53 | 8.96 | 17.75 | 19.68 | 14.42 | 12.35 | 6.37 | 4.42 | 100 |
| Arkansas | 37 | 23 | 12 | 17 | 31 | 63 | 161 | 168 | 148 | 123 | 78 | 41 | |
| Louisiana | 73 | 53 | 45 | 54 | 84 | 125 | 146 | 154 | 131 | 94 | 78 | 81 | |
| Oklahoma | 43 | 16 | 20 | 23 | 31 | 87 | 165 | 164 | 165 | 224 | 126 | 75 | |
| Texas | 24 | 29 | 12 | 19 | 31 | 60 | 99 | 112 | 112 | 84 | 56 | 66 | |
| Total (4 States) | 177 | 121 | 89 | 113 | 177 | 335 | 571 | 598 | 556 | 525 | 338 | 263 | 3,863 |
| Per cent | 4.50 | 3.40 | 2.26 | 2.97 | 4.50 | 8.79 | 14.50 | 15.19 | 14.59 | 13.34 | 8.87 | 6.68 | 100 |
| Montana | 8 | 4 | 5 | 5 | 10 | 6 | 17 | 23 | 21 | 15 | 8 | 9 | |
| Idaho | 2 | 3 | 3 | 3 | 6 | 5 | 8 | 15 | 23 | 15 | 6 | 4 | |
| Wyoming | .... | 4 | 6 | 1 | 2 | 3 | 6 | 9 | 8 | 9 | 7 | 3 | |
| Colorado | 14 | 9 | 18 | 10 | 13 | 22 | 38 | 68 | 87 | 66 | 47 | 22 | |
| New Mexico | 12 | 7 | 4 | 6 | 8 | 17 | 28 | 43 | 75 | 95 | 44 | 25 | |
| Arizona | 3 | 2 | 2 | 2 | 8 | 12 | 9 | 13 | 10 | 16 | 9 | 8 | |
| Utah | 4 | 4 | 2 | 4 | 13 | 16 | 14 | 40 | 42 | 37 | 10 | 6 | |
| Nevada | 1 | 1 | 1 | .... | 2 | 1 | .... | 6 | 5 | 4 | 2 | .... | |
| Total (8 States) | 44 | 34 | 41 | 31 | 62 | 82 | 120 | 217 | 271 | 257 | 133 | 77 | 1,369 |
| Per cent | 3.15 | 2.70 | 2.94 | 2.30 | 4.44 | 6.07 | 8.60 | 15.55 | 20.07 | 18.42 | 9.85 | 5.52 | 100 |
| Washington | 24 | 15 | 20 | 21 | 18 | 26 | 37 | 64 | 81 | 67 | 33 | 25 | |
| Oregon | 10 | 8 | 8 | 13 | 11 | 13 | 22 | 25 | 34 | 34 | 18 | 18 | |
| California | 52 | 29 | 44 | 47 | 62 | 94 | 108 | 131 | 115 | 104 | 75 | 63 | |
| Total (3 States) | 86 | 52 | 72 | 81 | 91 | 133 | 167 | 220 | 230 | 205 | 126 | 106 | 1,569 |
| Per cent | 5.38 | 3.60 | 4.50 | 5.23 | 5.69 | 8.59 | 10.44 | 13.76 | 14.86 | 12.82 | 8.14 | 6.63 | 100 |
| Total (47 States) | 1,558 | 1,131 | 1,105 | 1,208 | 1,635 | 2,716 | 4,971 | 6,241 | 5,956 | 5,229 | 2,902 | 2,032 | 36,684 |
| Per cent | 4.17 | 3.35 | 2.96 | 3.34 | 4.37 | 7.51 | 13.30 | 16.69 | 16.46 | 13.99 | 8.02 | 5.44 | 100 |

## WHOOPING COUGH

### SEASONAL PREVALENCE

Indicated Normal Numbers of Cases and Corrected Percentages of Annual Totals in Each Month, Based on Data Available for the Years 1922 to 1927, Inclusive

| | *Jan.* | *Feb.* | *March* | *April* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | 197 | 138 | 169 | 111 | 99 | 78 | 88 | 62 | 78 | 122 | 133 | 135 | |
| New Hampshire | 37 | 28 | 31 | 26 | 13 | 14 | 13 | 5 | 9 | 7 | 15 | 14 | |
| Vermont | 242 | 160 | 113 | 114 | 92 | 119 | 94 | 98 | 115 | 188 | 227 | 200 | |
| Massachusetts | 877 | 842 | 1,077 | 806 | 713 | 499 | 454 | 417 | 450 | 430 | 592 | 743 | |
| Rhode Island | 41 | 34 | 42 | 33 | 28 | 26 | 34 | 23 | 23 | 18 | 28 | 24 | |
| Connecticut | 294 | 210 | 267 | 216 | 222 | 195 | 229 | 192 | 174 | 163 | 246 | 246 | |
| Total (6 States) | 1,688 | 1,412 | 1,699 | 1,306 | 1,167 | 931 | 912 | 797 | 849 | 928 | 1,241 | 1,362 | 14,292 |
| Per cent | 11.59 | 10.73 | 11.66 | 9.26 | 8.01 | 6.60 | 6.26 | 5.47 | 6.02 | 6.37 | 8.80 | 9.35 | 100 |
| New York | 1,616 | 1,613 | 1,766 | 1,610 | 1,507 | 1,465 | 1,473 | 1,284 | 1,122 | 1,111 | 1,272 | 1,494 | |
| New Jersey | 634 | 586 | 724 | 625 | 585 | 567 | 597 | 498 | 422 | 372 | 481 | 606 | |
| Pennsylvania | 1,220 | 1,180 | 1,408 | 1,236 | 1,137 | 1,162 | 1,285 | 1,120 | 1,027 | 872 | 991 | 1,074 | |
| Total (3 States) | 3,470 | 3,379 | 3,898 | 3,471 | 3,229 | 3,194 | 3,355 | 2,902 | 2,571 | 2,355 | 2,744 | 3,174 | 37,742 |
| Per cent | 9.02 | 9.72 | 10.13 | 9.32 | 8.40 | 8.58 | 8.72 | 7.55 | 6.91 | 6.12 | 7.37 | 8.25 | 100 |
| Ohio | 821 | 899 | 1,031 | 960 | 1,090 | 1,066 | 1,141 | 832 | 539 | 463 | 534 | 604 | |
| Indiana | 266 | 294 | 301 | 320 | 275 | 223 | 277 | 217 | 107 | 144 | 196 | 179 | |
| Illinois | 801 | 797 | 920 | 888 | 842 | 939 | 1,035 | 875 | 677 | 606 | 689 | 751 | |
| Michigan | 566 | 586 | 623 | 618 | 640 | 656 | 694 | 651 | 476 | 398 | 415 | 477 | |
| Wisconsin | 583 | 499 | 546 | 565 | 549 | 465 | 796 | 633 | 904 | 430 | 563 | 559 | |
| Total (5 States) | 3,037 | 3,075 | 3,421 | 3,351 | 3,396 | 3,349 | 3,943 | 3,208 | 2,703 | 2,041 | 2,397 | 2,570 | 36,491 |
| Per cent | 8.17 | 9.15 | 9.20 | 9.31 | 9.13 | 9.30 | 10.60 | 8.63 | 7.51 | 5.49 | 6.66 | 6.91 | 100 |
| Minnesota | 111 | 120 | 156 | 157 | 186 | 143 | 132 | 108 | 106 | 102 | 92 | 80 | |
| Iowa | 48 | 47 | 66 | 56 | 54 | 60 | 48 | 14 | 15 | 30 | 49 | 40 | |
| Missouri | 154 | 157 | 210 | 211 | 231 | 303 | 329 | 214 | 157 | 159 | 149 | 147 | |
| North Dakota | 30 | 37 | 37 | 45 | 45 | 40 | 49 | 57 | 47 | 55 | 34 | 31 | |
| South Dakota | 40 | 30 | 30 | 26 | 35 | 32 | 38 | 31 | 31 | 29 | 37 | 40 | |
| Nebraska | 42 | 65 | 65 | 61 | 68 | 54 | 51 | 36 | 42 | 25 | 35 | 32 | |
| Kansas | 261 | 267 | 385 | 331 | 296 | 401 | 331 | 215 | 170 | 166 | 233 | 193 | |
| Total (7 States) | 686 | 723 | 949 | 887 | 915 | 1,033 | 978 | 675 | 568 | 566 | 629 | 563 | 9,172 |
| Per cent | 7.34 | 8.56 | 10.15 | 9.80 | 9.79 | 11.42 | 10.46 | 7.22 | 6.28 | 6.06 | 6.95 | 6.02 | 100 |
| Delaware | 16 | 12 | 11 | 7 | 14 | 8 | 9 | 5 | 8 | 7 | 13 | 14 | |
| Maryland | 318 | 290 | 341 | 307 | 337 | 317 | 352 | 274 | 214 | 198 | 235 | 242 | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District of Columbia | 67 | 73 | 95 | 92 | 91 | 67 | 70 | 48 | 41 | 39 | 34 | 62 | |
| Virginia | 1,513 | 1,579 | 1,660 | 1,451 | 1,345 | 1,132 | 905 | 651 | 470 | 518 | 591 | 754 | |
| West Virginia | 217 | 239 | 275 | 219 | 180 | 193 | 187 | 129 | 119 | 129 | 102 | 140 | |
| North Carolina | 1,068 | 1,192 | 1,462 | 1,373 | 1,417 | 1,247 | 1,075 | 711 | 557 | 506 | 616 | 660 | |
| South Carolina | 67 | 107 | 107 | 155 | 121 | 103 | 35 | 63 | 35 | 45 | 105 | 97 | |
| Georgia | 79 | 111 | 159 | 129 | 156 | 99 | 88 | 55 | 37 | 48 | 40 | 47 | |
| Florida | 23 | 32 | 55 | 77 | 88 | 68 | 41 | 24 | 20 | 17 | 18 | 13 | |
| Total (8 States) | 3,368 | 3,635 | 4,165 | 3,810 | 3,749 | 3,234 | 2,762 | 1,960 | 1,501 | 1,507 | 1,754 | 2,029 | 33,474 |
| Per cent | 9.87 | 11.80 | 12.21 | 11.54 | 10.99 | 9.80 | 8.10 | 5.74 | 4.55 | 4.42 | 5.31 | 5.95 | 100 |
| Kentucky | 118 | 178 | 146 | 129 | 86 | 72 | 81 | 50 | 59 | 35 | 48 | 56 | |
| Tennessee | 237 | 242 | 232 | 294 | 202 | 217 | 193 | 114 | 133 | 144 | 103 | 153 | |
| Alabama | 118 | 153 | 219 | 173 | 249 | 197 | 168 | 118 | 79 | 91 | 74 | 80 | |
| Mississippi | 866 | 1,119 | 1,404 | 1,421 | 1,475 | 1,344 | 1,006 | 758 | 684 | 634 | 723 | 742 | |
| Total (4 States) | 1,339 | 1,692 | 2,001 | 2,017 | 2,012 | 1,830 | 1,448 | 1,040 | 955 | 904 | 948 | 1,031 | 17,217 |
| Per cent | 7.63 | 10.68 | 11.40 | 11.88 | 11.47 | 10.78 | 8.25 | 5.93 | 5.62 | 5.15 | 5.58 | 5.88 | 100 |
| Arkansas | 101 | 105 | 129 | 124 | 144 | 137 | 134 | 103 | 71 | 55 | 75 | 64 | |
| Louisiana | 37 | 54 | 95 | 65 | 76 | 134 | 51 | 40 | 30 | 30 | 32 | 32 | |
| Oklahoma | 48 | 112 | 68 | 141 | 88 | 68 | 75 | 34 | 49 | 54 | 23 | 67 | |
| Texas | 98 | 198 | 164 | 192 | 170 | 211 | 180 | 123 | 139 | 72 | 81 | 86 | |
| Total (4 States) | 284 | 469 | 456 | 522 | 478 | 550 | 440 | 300 | 289 | 211 | 211 | 249 | 4,459 |
| Per cent | 6.25 | 11.43 | 10.03 | 11.87 | 10.52 | 12.51 | 9.68 | 6.60 | 6.57 | 4.64 | 4.80 | 5.48 | 100 |
| Montana | 45 | 32 | 31 | 28 | 31 | 26 | 45 | 28 | 29 | 21 | 27 | 30 | |
| Idaho | 13 | 26 | 39 | 67 | 35 | 23 | 18 | 31 | 12 | 16 | 14 | 10 | |
| Wyoming | 30 | 16 | 17 | 20 | 31 | 20 | 23 | 14 | 12 | 26 | 31 | 31 | |
| Colorado | 81 | 71 | 78 | 101 | 181 | 162 | 146 | 118 | 63 | 32 | 35 | 58 | |
| New Mexico | 35 | 33 | 41 | 54 | 46 | 29 | 18 | 21 | 57 | 18 | 21 | 14 | |
| Arizona | 7 | 8 | 6 | 21 | 9 | 9 | 12 | 4 | 8 | 4 | 10 | 6 | |
| Utah | 167 | 310 | 312 | 351 | 360 | 333 | 310 | 234 | 177 | 123 | 133 | 140 | |
| Nevada | 9 | 7 | 4 | 5 | 4 | 1 | 1 | 2 | 4 | 1 | 1 | 3 | |
| Total (8 States) | 387 | 503 | 528 | 647 | 697 | 603 | 362 | 452 | 362 | 241 | 272 | 292 | 5,557 |
| Per cent | 6.83 | 9.83 | 9.32 | 11.80 | 12.31 | 11.00 | 10.12 | 7.98 | 6.60 | 4.26 | 4.96 | 5.16 | 100 |
| Washington | 135 | 178 | 234 | 295 | 298 | 220 | 178 | 129 | 75 | 71 | 68 | 69 | |
| Oregon | 25 | 18 | 39 | 50 | 72 | 45 | 32 | 15 | 17 | 23 | 13 | 16 | |
| California | 379 | 406 | 639 | 766 | 824 | 603 | 467 | 383 | 268 | 257 | 291 | 277 | |
| Total (3 States) | 539 | 602 | 912 | 1,111 | 1,194 | 868 | 677 | 527 | 360 | 351 | 372 | 362 | 7,875 |
| Per cent | 6.72 | 8.30 | 11.36 | 14.30 | 14.88 | 11.18 | 8.43 | 6.57 | 4.64 | 4.37 | 4.79 | 4.51 | 100 |
| Total (48 States) | 14,798 | 15,490 | 18,029 | 17,122 | 16,837 | 15,592 | 15,088 | 11,861 | 10,158 | 9,104 | 10,568 | 11,632 | 166,279 |
| Per cent | 8.73 | 10.11 | 10.64 | 10.44 | 9.93 | 9.51 | 8.90 | 7.00 | 6.20 | 5.37 | 6.45 | 6.86 | 100 |

### SEASONAL PREVALENCE IN THE UNITED STATES, REGISTRATION AREA, OF SOME COMMUNICABLE DISEASES

Total Cases with Per Cent by Months of Total Cases Reported for Seven Years, 1921–1927

| *Number of States* | *Disease* | *Total Cases Reported* | *Jan.* | *Feb.* | *Mar.* | *Apr.* | *May* | *June* | *July* | *Aug.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 | Diphtheria | 122,896 | 11.02 | 9.47 | 7.85 | 7.01 | 6.29 | 5.78 | 4.73 | 4.97 | 7.39 | 11.86 | 12.74 | 10.98 |
| 48 | Scarlet fever | 180,000 | 12.84 | 13.23 | 12.19 | 10.48 | 8.54 | 6.02 | 3.00 | 2.43 | 3.83 | 7.23 | 9.81 | 10.77 |
| 48 | Measles | 321,318 | 7.62 | 12.59 | 16.33 | 19.49 | 18.18 | 12.35 | 3.90 | 1.02 | 0.70 | 1.32 | 2.62 | 4.33 |
| 48 | Smallpox | 35,039 | 14.76 | 15.23 | 14.33 | 13.19 | 10.50 | 7.42 | 4.50 | 2.46 | 1.71 | 2.87 | 5.27 | 8.24 |
| 47 | Poliomyelitis | 3,416 | 2.67 | 2.26 | 2.01 | 1.57 | 2.13 | 3.21 | 8.36 | 19.59 | 22.77 | 20.16 | 9.76 | 5.06 |
| 43 | Meningococcus meningitis | 1,941 | 9.86 | 9.91 | 10.77 | 9.77 | 8.59 | 7.37 | 7.43 | 7.43 | 7.05 | 6.77 | 7.37 | 7.78 |
| 47 | Typhoid | 36,684 | 4.17 | 3.35 | 2.96 | 3.34 | 4.37 | 7.51 | 13.30 | 16.69 | 16.46 | 13.99 | 8.02 | 5.44 |
| 48 | Whooping cough | 166,279 | 8.73 | 10.11 | 10.64 | 10.44 | 9.93 | 9.51 | 8.90 | 7.00 | 6.20 | 5.37 | 6.45 | 6.86 |

The foregoing tables indicate when the pressure on the health department is likely to be greatest, which may differ in the South, where intestinal diseases are more prevalent, from the North, where respiratory diseases are more common. The tables indicate to some degree when the health authorities may most appropriately warn people of an expected rise in the incidence of a particular disease.

DEATH RATES PER 100,000 POPULATION FROM EIGHTEEN PRINCIPAL COMMUNICABLE DISEASES IN THE REGISTRATION STATES OF 1910, BY URBAN AND RURAL DISTRICTS, AND IN THE GROUP OF THE FIFTY CITIES OF 100,000 POPULATION OR MORE IN 1910, FOR THE TWO FIVE-YEAR PERIODS, 1910–1914 AND 1923–1927

| CAUSE OF DEATH | DEATH RATE PER 100,000 ESTIMATED POPULATION IN THE REGISTRATION STATES OF 1910 * | | | | | | REGISTRATION CITIES OF 100,000 POPULATION OR MORE IN 1910 | |
|---|---|---|---|---|---|---|---|---|
| | *TOTAL* | | *URBAN* | | *RURAL DISTRICTS* | | | |
| | 1910–14 | 1923–27 | 1910–14 | 1923–27 | 1910–14 | 1923–27 | 1910–14 | 1923–27 |
| All causes | 1,399.2 | 1,208.3 | 1,500.2 | 1,255.4 | 1,283.3 | 1,142.6 | 1,529.5 | 1,277.2 |
| Typhoid and paratyphoid fever | 16.5 | 3.4 | 16.5 | 3.1 | 16.5 | 3.9 | 14.5 | 3.0 |
| Malaria | 0.9 | 0.1 | 0.7 | 0.1 | 1.1 | 0.1 | 1.6 | 0.3 |
| Smallpox | 0.2 | 0.6 | 0.2 | 0.7 | 0.2 | 0.3 | 0.1 | 0.8 |
| Measles | 9.5 | 6.2 | 10.8 | 6.3 | 8.0 | 6.0 | 10.4 | 5.9 |
| Scarlet fever | 8.4 | 3.2 | 10.2 | 3.0 | 6.3 | 3.5 | 12.0 | 2.8 |
| Whooping cough | 9.8 | 6.8 | 9.6 | 6.5 | 10.2 | 7.3 | 8.6 | 6.1 |
| Diphtheria | 18.2 | 9.2 | 22.0 | 10.8 | 13.9 | 7.0 | 23.8 | 11.1 |
| Influenza | 11.7 | 25.5 | 8.2 | 20.4 | 15.7 | 32.7 | 8.0 | 18.1 |
| Dysentery | 4.0 | 1.1 | 2.9 | 0.8 | 5.2 | 1.5 | 2.9 | 1.0 |
| Erysipelas | 4.2 | 2.8 | 4.8 | 3.0 | 3.4 | 2.5 | 4.9 | 2.9 |
| Acute anterior poliomyelitis | 1.8 | 1.3 | 1.6 | 1.2 | 2.0 | 1.4 | 1.3 | 1.0 |
| Lethargic encephalitis | † | 1.9 | † | 2.5 | † | 1.2 | † | 2.4 |
| Meningococcus meningitis | 1.0 | 1.3 | 1.1 | 1.6 | 0.8 | 0.8 | 2.0 | 1.7 |
| Tetanus | 1.7 | 1.0 | 1.7 | 1.1 | 1.6 | 0.9 | 2.2 | 1.2 |
| Tuberculosis (all forms) | 145.7 | 85.3 | 166.8 | 84.4 | 121.4 | 86.5 | 182.9 | 94.4 |
| Syphilis | 6.0 | 7.1 | 8.2 | 9.0 | 3.5 | 4.4 | 10.6 | 11.3 |
| Gonococcus infection | 0.4 | 0.7 | 0.5 | 1.0 | 0.2 | 0.3 | 0.6 | 1.4 |
| Purulent infection, septicemia | 2.8 | 1.0 | 2.9 | 1.1 | 2.6 | 1.0 | 2.8 | 0.9 |

* Excluding North Carolina.

† Not separately tabulated.

### MORTALITY

The Department of Commerce, Bureau of the Census, has furnished the figures on page 87 which indicate the trends in mortality for eighteen communicable diseases during the last eighteen years, by comparing the average death rate for 1910–1914 with the average rate for 1923–1927. That the figures might be comparable, only the States which were in the registration area in 1910 have been included. Urban and rural rates are shown for comparative purposes, as well as the average rates for the fifty large cities in the registration area in 1910. For most diseases, as the figures indicate, there has been a decided reduction in death rates for the period but for a few, such as smallpox and poliomyelitis, there has been no improvement.

## Specific Therapy or Prophylaxis

### ITS USE IN SOME OF THE LARGER CITIES OF THE UNITED STATES

*Baltimore, Md.,* reports the use of toxin-antitoxin (goat serum) for diphtheria, and convalescent serum for poliomyelitis with marked success; convalescent serum for measles in institutions; scarlet fever toxin for immunity, and scarlet fever antitoxin for therapy in severe cases. The Health Department does not advocate the general prophylactic use of scarlet fever antitoxin. Pertussis vaccine is used with variable results, but good results are reported for erysipelas antitoxin.

*Buffalo, N. Y.,* dispenses to the medical profession and to hospitals, typhoid vaccine, smallpox vaccine, pertussis vaccine, tetanus antitoxin, scarlet fever antitoxin and scarlet fever toxin, diphtheria antitoxin and toxin-antitoxin, anti-dysentery serum, anti-meningococcus serum, anti-pneumococcus serum, and convalescent serum for measles and poliomyelitis cases.

*Cleveland, Ohio,* reports that it distributes, free of charge, smallpox vaccine, diphtheria antitoxin, and diphtheria toxin-antitoxin, but does not indicate the degree of success in controlling the diseases for which these are used or the degree of success in controlling other diseases.

*Detroit, Mich.,* makes a liberal use of convalescent serums. A clinic is formed to receive blood from recently recovered cases of scarlet fever, measles, mumps, poliomyelitis, and chickenpox, and serum is used fairly extensively in institutions to prevent epidemics of these diseases. Inunctions of scarlet fever toxin and lanolin are being tried as a preventive for scarlet fever.

*Kansas City, Mo.* For prophylaxis, smallpox vaccine and diphtheria toxin-antitoxin are used. Other vaccines or serums are used for therapy but use is not made of them by the Health Department for measles, mumps, scarlet fever, or whooping cough. It is considered that specific prophylaxis for the two last named diseases has not been sufficiently tried out to warrant general use.

*Los Angeles, Cal.,* reports the use of diphtheria antitoxin for treatment, toxin-antitoxin for immunization, the use of convalescent serum (and in some cases adult parent serum) for suitable cases of measles, convalescent serum for poliomyelitis cases, and commercial serum for meningococcus meningitis; convalescent serum under certain conditions is advocated to produce passive immunity to scarlet fever. Smallpox vaccine, typhoid vaccine, tetanus antitoxin, and Pasteur treatment or a modified form of it are also used when occasion demands.

*Louisville, Ky.,* reports that owing to a recent outbreak of scarlet fever in which 630 cases (all mild) occurred, an attempt was made to immunize against the disease, but the effort was abandoned because of the marked reactions which occurred in those offering themselves for immunization.

*Milwaukee, Wis.,* reports the use of toxin-antitoxin for prevention of diphtheria, antitoxin for treatment of cases; immunization against scarlet fever by scarlet fever toxin but only in institutions and hospitals, and treatment of cases by scarlet fever antitoxin which it is claimed has given very satisfactory results. For measles in Milwaukee Children's Hospital, convalescent serum has been used to prevent or modify the course of the disease, but some doubt as to the value of its general use is expressed.

*Minneapolis, Minn.*, reports a study of the prevention of scarlet fever. Free inoculation was begun November, 1926, and continued to March, 1927, the Health Department, the Board of Education, and the Medical Society cooperating. A soap-toxin was used. Each cc. contained 1/10 plus L. diphtheria toxin and 3000 skin test doses of scarlet fever toxin; 9500 children were inoculated. Records of these children were made and their history has been followed. Three years have elapsed since the inoculations and a check extending over the last eighteen months of one thousand of these children shows four times as many cases among a control group as compared with the treated group. Corresponding figures are not available for diphtheria as large numbers of children were immunized by physicians privately.

It is stated that so far as scarlet fever is concerned the prophylactic treatment referred to above is worth while, even if the toxin is not specific from the scientific standpoint and as high a degree of immunity cannot be developed as by diphtheria immunization. It is stated, too, that of children given scarlet fever toxin, about four times as many developed the disease where a commercial preparation was used as did among the 9500 group treated as indicated.

*Newark, N. J.*, reports that serums of all types are provided free and used in that city.

*New York, N. Y.*, supplies diphtheria toxin-antitoxin and diphtheria toxin through seven hundred distributing stations in the city at a charge of twenty-five cents. An agency or physician may obtain toxin-antitoxin free by calling at the borough health offices. The Health Department supplies anti-meningococcic serum for meningitis and the services of an expert to aid physicians with cases; supplies free typhoid and paratyphoid vaccines. No antiserum is supplied for whooping cough but vaccine is used which is thought to do some good. For measles the use of whole adult blood, 30 to 50 cc.'s, is recommended by the director of the city laboratories as being effective in preventing measles in children or modifying its course. Practically all adults have had measles. The use of convalescent serum will also have similar protective results on mumps and poliomyelitis. Scarlet fever antitoxin has not been extensively used by the Health Department.

*Philadelphia, Pa.* The Department of Health supplies free to physicians diphtheria antitoxin and typhoid vaccine; also smallpox vaccine to institutions and hospitals. The Department has not gone on record as advocating the use of serums or vaccines for measles, whooping cough, or scarlet fever.

*Pittsburgh, Pa.,* makes use prophylactically or for immunizing purposes of diphtheria toxin-antitoxin, meningitis serums, and anthrax serum, smallpox vaccine, typhoid vaccine, and anti-tetanic serum. For prophylactic purposes in diphtheria an immunizing dose of 3,000 units of diphtheria antitoxin is recommended.

*Rochester, N. Y.,* makes use of pertussis vaccine, diphtheria toxin-antitoxin, typhoid vaccine, scarlet fever toxin, and diphtheria antitoxin.

*San Francisco, Cal.,* reports as follows: "We have had good success in the use of serums in the few poliomyelitis cases we have had, and we are accumulating a considerable stock in this city.

"Our typhoid cases have been few, but our use of prophylactic vaccine for mountain vacationists, when we can succeed in getting them to use it, seems to be bearing fruit. A few are using mumps convalescent serum. Measles convalescent serum is being used and highly thought of. We have felt that in the handling of whooping cough poor results have been obtained from too small dosages, and with larger dosages we think we are having considerable more success."

*Seattle, Wash.,* reports that toxin-antitoxin and toxoid are being used to prevent diphtheria (where parents can be convinced of their value) and antitoxin for treatment of cases. Serum is used in the treatment of scarlet fever and meningococcus meningitis. For this latter disease a conservative plan is followed, using less serum at increased intervals—intraspinal injections every twelve hours until five doses are administered—have given the best results. Culture methods are now being tried for the release of scarlet fever cases.

*St. Louis, Mo.,* reports the use of smallpox vaccine, typhoid vaccine, diphtheria toxin-antitoxin and toxoid (followed by Schick test in nine months or later); diphtheria antitoxin for treatment of cases; scarlet fever Dick test for food handlers and contacts in orphan homes; scarlet fever antitoxin for toxic cases of the disease; pertussis vaccine as a prophylactic, six doses, ½ cc., five days apart; no serum used for mumps; meningococcic serum for treatment of meningitis; plate cultures to discover carriers of the meningococcus.

*Syracuse, N. Y.,* states that convalescent serum, when obtainable, is used for chickenpox, measles, and mumps (when indicated); for diphtheria, antitoxin and toxin-antitoxin are used; for scarlet fever, toxin and antitoxin; for treatment of epidemic meningitis, State Laboratory serum; and for poliomyelitis, convalescent serum in the pre-paralytic stage. For typhoid and for whooping cough, vaccines are used, the first for prevention and the second for both prevention and treatment.

*Toledo, Ohio,* uses serums or vaccines for prophylactic purposes for diphtheria, typhoid fever, whooping cough, smallpox and in some cases for scarlet fever, and therapeutically for diphtheria, scarlet fever, whooping cough, meningitis, and for some cases of measles. In general, good results have been obtained but it is stated that "it is hard to institute the use of serums and vaccines in whooping cough, measles, and scarlet fever as public health measures."

# PROCEDURES RECOMMENDED FOR THE CONTROL OF INDIVIDUAL DISEASES

THE procedures recommended in this section are those considered by persons who have had wide experience with the individual diseases through clinical service, through field studies, and through laboratory service, to be scientifically sound and the most effective for disease control. The Committee is greatly indebted for the form of presentation and much of the matter used, to the admirable handbook issued in its revised form in 1926 by the Committee on Communicable Disease Control of the American Public Health Association. The present Committee has, however, included some diseases not included in that handbook and has incorporated a reference to some aspects of disease for a number of the diseases listed not featured in the handbook. The Committee has consulted more than fifty experts throughout the country, a number of whom belong to the staff of the United States Public Health Service, to obtain as accurate a statement as possible on the different diseases in the light of recent knowledge and investigation. To the experts, many of whom were not members of the Committee, special thanks are due.

## DEFINITIONS OF TERMS

The definitions of terms used in the recommended administrative measures for individual diseases are those of the American Public Health Association handbook already referred to and are as follows:

"1. CARRIER. A person who, without symptoms of a communicable disease, harbors and disseminates the specific micro-organisms.

"2. CLEANING. This term signifies the removal by scrubbing and washing, as with hot water, soap, and washing soda, of organic matter on which and in which bacteria may find favorable conditions for prolonging life and virulence; also the removal by the same means of bacteria adherent to surfaces.

"3. CONTACT. A *contact* is any person or animal known to have been sufficiently near to an infected person or animal to have been presumably exposed to transfer of infectious material directly, or by articles freshly soiled with such material.

"4. DELOUSING. By *delousing* is meant the process by which a person and his personal apparel are treated so that neither the adults nor the eggs of *pediculus corporis* or *pediculus capitis* survive.

"5. DISINFECTION. By this is meant the destroying of the vitality of pathogenic micro-organisms by chemical or physical means.

"When the word *concurrent* is used as qualifying disinfection, it indicates the application of disinfectants immediately after the discharge of infectious material from the body of an infected person, or after the soiling of articles with such infectious discharges, all personal contacts with such discharges or articles being prevented prior to their disinfection.

"When the word *terminal* is used as qualifying disinfection, it indicates the process of rendering the personal clothing and immediate physical environment of the patient free from the possibility of conveying the infection to others, at the time when the patient is no longer a source of infection.

"6. DISINFESTING. By disinfesting is meant any process, such as the use of dry or moist heat, gaseous agents, poisoned food, trapping, and so forth, by which insects and animals known to be capable of conveying or transmitting infection may be destroyed.

"7. EDUCATION IN PERSONAL CLEANLINESS. This phrase is intended to include all the various means available to impress upon all members of the community, young and old, and especially when communicable disease is prevalent, or during epidemics, by spoken and printed word, and by illustration and suggestion, the necessity of:

"(1) Keeping the body clean by sufficiently frequent soap and water baths
"(2) Washing hands in soap and water after voiding bowels or bladder and always before eating
"(3) Keeping hands and unclean articles, or articles which have been used for toilet purposes by others away from mouth, nose, eyes, ears, and vagina
"(4) Avoiding the use of common or unclean eating, drinking, or toilet articles of any kind, such as towels, handkerchiefs, hair brushes, drinking cups, pipes, and so forth
"(5) Avoiding close exposure of persons to spray from the nose and mouth, as in coughing, sneezing, laughing, or talking.

"8. FUMIGATION. By *fumigation* is meant a process by which the destruction of insects, as mosquitoes and body lice, and animals, as rats, is accomplished by the employment of gaseous agents.

"9. ISOLATION.* By *isolation* is meant the separating of persons suffering from a communicable disease, or carriers of the infecting organism, from other persons, in such places and under such conditions as will prevent the direct or indirect conveyance of the infectious agent to susceptible persons.

"10. QUARANTINE.* By *quarantine* is meant the limitation of freedom of movement of persons or animals who have been exposed to communicable disease for a period of time equal to the longest usual incubation period of the disease to which they have been exposed.

"11. RENOVATION. By *renovation* is meant, in addition to cleansing, such treatment of the walls, floors, and ceilings of rooms or houses as may be necessary to place the premises in a satisfactory sanitary condition.

"12. REPORTING. By report of a disease is meant the notification to the health authorities, and, in the case of communicable disease in animals, also to the respective Department of Agriculture, who have immediate jurisdiction, that a case of communicable disease exists in a specified person or animal at a given address.

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* In view of the various ambiguous and inaccurate uses to which the words *isolation* and *quarantine* are not infrequently put, it has seemed best to adopt arbitrarily the word *isolation* as describing the limitation put upon the movements of the known sick or "carrier" individual or animal, and the word *quarantine* as describing the limitations put upon exposed or "contact" individuals.

"13. SUSCEPTIBLES. A *susceptible* is a person or animal who is not known to have become immune to the particular communicable disease in question by natural or artificial process."

## Diseases Generally Reportable

Realizing that the diseases which should be reportable will vary with climate, geographical, and other local conditions, the Committee, however, is definitely of the opinion that there are certain diseases which should be reportable for all parts of the country. It is therefore suggested that the following diseases which comprise the diseases on the weekly telegraphic report list to the Surgeon General of the United States Public Health Service be promptly reported throughout the country, viz.:

Diphtheria
Influenza (Epidemic)
Measles
Meningococcus Meningitis
Poliomyelitis
Scarlet Fever
Smallpox
Typhoid Fever

All cases, or suspected cases, of cholera, plague, typhus fever, leprosy, and yellow fever should have a special report.

There are other diseases such as tuberculosis, syphilis, gonorrhea, gonorrheal ophthalmia, trachoma, anthrax (in humans), rabies (in humans), and septic sore throat which should universally be promptly reported locally.

## General Control Measures Among School Children

1. Morning inspection of every child by nurse or teacher who is familiar with ordinary signs of disease.
2. All suspects referred to the school physician, local health officer, or family physician for diagnosis.
3. Exclude suspects and recognized cases until certified by competent authority as safe to return.

## Hospitalization

### PURPOSES AND LIMITATIONS

Certain principles in regard to hospital isolation of communicable disease must be clearly recognized:

(a) It is now recognized that hospitalization will not influence the prevalence of many of the common communicable diseases of childhood.

(b) From the standpoint of economy and more efficient treatment of the patient, the isolation wards should be incorporated into a general hospital in communities of less than about 100,000 population.

(c) It is exceedingly important that a contagious disease hospital, or a contagious ward of a general hospital shall be properly constructed and in charge of physicians and nurses who are familiar with proper contagious disease hospital technique. If an isolation hospital is not a part of a general hospital it should have available consulting specialists and be provided with all the facilities of a modern general hospital.

(d) One of the important functions of a contagious disease hospital is the training of physicians and nurses in the care of contagious diseases and the methods of preventing their dissemination. This training should be made available, in so far as possible, to all physicians and nurses. This training is essential to those who plan to specialize in pediatrics, or to enter public health work.

(e) Formerly hospitalization was reserved for scarlet fever, diphtheria, and smallpox patients. Isolation wards in hospitals, however, should be in a position to accept any type of communicable disease, the presence of which in a general hospital might endanger other patients. More and more general hospitals do not attempt to provide isolation facilities and we note with great regret that they are becoming disinclined to accept for treatment contagious diseases of any kind.

(f) In the smaller cities and in towns there is a general need for more adequate and better hospital facilities for care of communicable disease cases. These should be provided through the addition of an isolation ward to the general hospital.

(g) Preference in hospitalization should be given to the more serious diseases and those most likely to produce complications, where the patient is being considered rather than the possibility of spread of a communicable disease.

### ITEMS PRESENTED FOR INDIVIDUAL DISEASES

I. ETIOLOGICAL AGENT.

I a. DIAGNOSTIC CRITERIA.
    (1) *Clinical.*
    (2) *Laboratory.*

II. SOURCE OF INFECTION.

III. MODE OF TRANSMISSION.

IV. PERIOD OF INCUBATION.

V. COMMUNICABILITY.
    (1) *Period and Degree of.*
    (2) *Immunity:* natural; acquired.

V a. STATISTICAL EPIDEMIOLOGY.
    (1) *Prevalence.*
    (2) *Age and Sex Distribution.*
    (3) *Racial Distribution.*
    (4) *Geographical Distribution.*
    (5) *Seasonal Distribution.*
    (6) *Cyclical Distribution.*
    (7) *Mortality.*
    (8) *Case Fatality.*

VI. ADMINISTRATIVE MEASURES.
    (1) *Investigation of Source of Infection.*
    (2) *Isolation.*
    (3) *Quarantine.*
    (4) *Prophylaxis.*
    (5) *Concurrent Disinfection.*
    (6) *Terminal Disinfection.*

SPECIAL MEASURES.

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## ACTINOMYCOSIS

I. ETIOLOGICAL AGENT. *Actinomyces bovis.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms confirmed by (2) microscopical examination of discharges from the lesions.

II. SOURCE OF INFECTION. Principal source is probably infested grasses and grains.

III. MODE OF TRANSMISSION. Chiefly by infested grasses, and so forth, infecting wounds of oral cavity.

IV. PERIOD OF INCUBATION. Unknown.

V. COMMUNICABILITY. As long as open lesions remain, as proved by the presence of the infectious agent on microscopical or cultural tests.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

(2) *Isolation.* None, provided the patient is under adequate medical supervision.

(3) *Quarantine.* None.

(4) *Specific therapy.* Autogenous vaccines still on trial.

(5) *Prophylaxis.* None.

(6) *Concurrent disinfection.* Of discharges from lesions and articles soiled therewith.

(7) *Terminal disinfection.* By thorough cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Avoid practice of chewing straws, grass, or grains.

(2) Inspection of meat, with condemnation of carcasses, or infected parts of carcasses of infected animals.

(3) Destruction of known animal sources of infection.

## ANTHRAX

I. ETIOLOGICAL AGENT. Anthrax bacillus, *Bacillus anthracis.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms, confirmed by (2) bacteriological examination.

II. SOURCE OF INFECTION. Hair, hides, flesh, feces, and blood of infected animals.

III. MODE OF TRANSMISSION. Inoculation, as by accidental wound or scratch, inhalation of spores of the infectious agent, ingestion of insufficiently cooked, infected meat, and mechanically by flies and mosquitoes.

IV. PERIOD OF INCUBATION. Within seven days.

V. COMMUNICABILITY. During the febrile stage of the disease and until lesions have ceased discharging. Infected hair and hides of infected animals may communicate the disease for many months after slaughter of the animal, and after curing of hide, fur, or hair, unless disinfected.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

(2) *Isolation.* Of the infected individual until the lesions have healed.

(3) *Quarantine.* None.
(4) *Concurrent disinfection.* Of the discharges from lesions and articles soiled therewith. Spores can be killed only by special methods such as steam under pressure or burning.
(5) *Terminal disinfection.* Thorough cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Animals ill with a disease presumably anthrax should be placed immediately in the care of a veterinary surgeon. Carcasses of animals dead of anthrax should be promptly disposed of, preferably by burning, without skinning or otherwise opening carcasses.
(2) Isolation of all animals affected with the disease.
(3) Immunization of exposed animals under direction of the Federal or State Department of Agriculture.
(4) Post-mortem examination should be made only by a veterinary surgeon, or in the presence of one.
(5) Milk from an infected animal should not be used during the febrile period.
(6) Control and disinfection of effluents and trade wastes and of areas of land polluted by such effluents and wastes from factories or premises, where spore-infected hides or other infected hide and hair products are known to have been worked up into manufactured articles.
(7) A physician should be constantly employed by every company handling raw hides, or such companies should operate under the direct supervision of a medical representative of the health department.
(8) Every employee handling raw hides, hair, or bristles, who has an abrasion of the skin should immediately report to a physician.

(9) Special instruction should be given to all employees handling raw hides in regard to the necessity of personal cleanliness.

(10) Tanneries and woolen mills should be provided with proper ventilating apparatus so that dust can be promptly removed before reaching the breathing area.

(11) Disinfection of hair, wool, and bristles of animals originating in known infected centers before they are used or assorted.

(12) The sale of hides from an animal infected with anthrax should be prohibited. A violation of this regulation should be immediately reported to the State Commissioner of Agriculture, by telegram, stating the time, place, and purchaser to whom the hide was sold. The report should also be sent to the person purchasing the hide. Carcasses should be disposed of under the supervision of the State Department of Agriculture. The inspection and disinfection of imported hides are under the supervision of the United States Bureau of Animal Industry. In the event that infection is introduced, the State agricultural authorities have jurisdiction over infected animals and the local or State health authorities have jurisdiction over infected persons.

## ASCARIASIS

I. ETIOLOGICAL AGENT. The large round worm of man, *Ascaris lumbricoides*.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Of no value in diagnosis.

(2) *Laboratory.* The finding of eggs in the stool by fecal examination. The egg production is so great that one female worm producing eggs makes it easy to find them.

II. SOURCE OF INFECTION. Articles soiled with excreta of children, in or around houses.

III. MODE OF TRANSMISSION. Eggs spread on the ground by soil pollution require, in summer, about two weeks to become embryonated (infective). They are resistant to cold and drying, and become infective in conditions quite unsuitable for hookworm larvae. Infection is by ingestion of embryonated ascaris eggs which hatch and penetrate the intestinal wall to the circulatory system and reach the lungs. From the lungs most of them pass to the air passages, throat, and stomach; thence to the small intestine. Ascaris spreads most readily under conditions of poor household sanitation and lack of personal hygiene. Insanitary habits of the children in regard to excreta account for most of the spread. Infective material may be carried from place to place on shoes.

IV. PERIOD OF INCUBATION. It takes about two months for worms to develop to maturity after infestation.

V. COMMUNICABILITY.

(1) *Period and degree of.* Period of communicability is as long as mature female worms live in the intestine. Each female ascarid produces about 200,000 eggs a day so that even light cases can spread the eggs widely.

(2) *Natural and acquired immunity.* Undetermined.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* In the United States the important endemic centers are chiefly in the mountain regions of the southeastern United States, including West Virginia, southwestern Virginia, eastern and central Kentucky and Tennessee, western North Carolina, and northern Georgia and Alabama. No important endemic areas of any considerable

size have been reported outside this general region.

(2) *Age and sex distribution.* The infestations of children of preschool and early school age are much heavier than in the older children and adults.

(3) *Racial distribution.* No differences known.

(4) *Geographical distribution.* See (1) above.

(5) *Seasonal distribution.* Probably some reduction in winter.

(6) *Cyclical distribution.* None known.

(7) *Mortality* and (8) *Case fatality.* Very low rate. Deaths of young children due primarily to very heavy infestations, intestinal blockage, or wanderings of worms, which are occasionally reported.

## VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: It is impossible to distinguish between carriers and clinical cases. Only a small number of very heavy cases show very definite symptoms.

(2) *Isolation.* None.

(3) *Quarantine.* None.

(4) *Specific therapy.* Oil of chenopodium.

(5) *Prophylaxis.*

(a) Mass treatment is probably of little value in control of ascaris because of the rapid reinfestation and the persistence of the eggs in the soil for considerable periods.

(b) Provide training in personal habits and convenient means of disinfection.

## ADDITIONAL SPECIAL MEASURES.

(1) General sanitary campaigns through extension of county health work will gradually reduce ascaris. Improvement in sanitary disposal

of human wastes. Development of cleanly living habits.

(2) Further studies on the distribution in the United States will give valuable information. Further clinical studies on relation of lung migrations of the larvae to pulmonary conditions of children are especially needed.

## CHICKENPOX

I. ETIOLOGICAL AGENT. Undetermined virus present in the contents of the vesicles.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* An eruptive disease with superficially placed and generally distributed vesicles, with febrile symptoms variable in intensity and duration, but usually mild, brief, and coincident with the beginning of the eruption. The papular eruption, progressing to a vesicular stage within a day or two, tends to be as thickly placed on the covered as on the exposed parts of the body, and frequently appears in different stages on the same region.

(2) *Laboratory.* None practicable.

II. SOURCE OF INFECTION. The infectious agent is present in the lesions of the skin and mucous surfaces.

III. MODE OF TRANSMISSION. Directly from person to person; indirectly through articles freshly soiled by discharges from infected individuals. Intimate contact is not necessary.

IV. PERIOD OF INCUBATION. Two to three weeks.

V. COMMUNICABILITY. About twenty-four hours preceding the eruption of the skin; especially communicable during the early stage of the eruption; probably not for more than ten days after the eruption appears.

(1) *Degree.* Readily communicable to susceptible persons.

(2) *Immunity.* Acquired immunity, lifelong in the great majority of instances; natural immunity, unusual.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Universal. Probably 90 per cent of adults have had the disease in recognized or unrecognized form.

(2) *Age and sex distribution.* Cases of this disease in adults are more unusual than are any of the other common infectious diseases; not very frequent in early infancy.

(3) *Racial distribution.* No racial immunity.

(4) *Geographical distribution.* Not limited geographically.

(5) *Seasonal distribution.* Greatest frequency, in winter and spring.

(6) *Cyclical distribution.* No regular cycle of prevalence.

(7) *Mortality.* Extremely low.

(8) *Case fatality.* About .01 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Reporting: Chickenpox should be reportable because cases thought to be chickenpox in persons over fifteen years of age, or at any age during an epidemic of smallpox, should be investigated to eliminate the possibility of their being smallpox cases.

(2) *Isolation.* Patient should be excluded from school; and avoidance of contact with nonimmune persons advised. No placarding.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Prophylaxis,* specific.

(a) Active: None practicable.

(b) Passive: Convalescent serum in institutional outbreaks and in exceptional instances.

(6) *Concurrent disinfection.* Of articles soiled by discharges from lesions should be carried out.

(7) *Terminal disinfection.* None.

## CHOLERA

I. ETIOLOGICAL AGENT. Cholera vibrio. *Vibrio comma.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms, confirmed by (2) bacteriological examination.

II. SOURCE OF INFECTION. Discharges of the sick and of carriers.

III. MODE OF TRANSMISSION. By food and water polluted by infectious agent; by contact with infected persons, carriers, or articles freshly soiled by their discharges; by flies.

IV. PERIOD OF INCUBATION. One to five, usually three days, occasionally longer if the healthy carrier stage before development of symptoms is included.

V. COMMUNICABILITY.

(1) *Period and degree of.* Usually seven to fourteen days, or longer, and until the infectious organism is absent from the bowel discharges. Degree of communicability high.

(2) *Immunity.* Little, natural; acquired, uncertain.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
Carriers: It is important that carriers be isolated until germ free.

(2) *Isolation.* For the period of communicability.

(3) *Quarantine.* Valuable. Five days from last exposure or longer if stools contain cholera vibrio.

(4) *Specific therapy.* None.

(5) *Prophylaxis.*
  (a) Active: Vaccine reported to give good results.
  (b) Passive: None.

(6) *Concurrent disinfection.* Prompt and thorough disinfection of the stools and vomited matter. Articles used by and in connection with the patient must be disinfected before removal from the room. Food left by the patient should be burned.

(7) *Terminal disinfection.* Bodies of those dying from cholera should be cremated if practicable, or, otherwise, wrapped in a sheet wet with disinfectant solution and placed in watertight caskets. The room in which a sick patient was isolated should be thoroughly cleaned and disinfected.

### ADDITIONAL SPECIAL MEASURES.

(1) Rigid personal prophylaxis of attendants by scrupulous cleanliness, use of rubber gloves, disinfection of hands each time after handling patient or touching articles contaminated by dejecta, the avoidance of eating or drinking anything in the room of the patient, and the prohibition of those attendant on the sick from entering the kitchen.

(2) The bacteriological examination of the stools of all contacts to determine carriers. Isolation of carriers.

(3) Water should be boiled if used for drinking or toilet purposes or if used in washing dishes or food containers, unless the water supply is adequately protected against contamination, or is so treated, as by chlorination, that the cholera vibrio cannot survive in it.

(4) Careful supervision of food and drink. Where cholera is prevalent, only cooked

foods should be used. Food and drink after cooking or boiling should be protected against contamination, as by flies and human handling.

(5) As epidemic measures: Inspection service for early detection and isolation of cases; examination of persons exposed in infected centers for detection of carriers, with isolation or control of carriers; disinfection of rooms occupied by the sick; investigation of all deaths, and the detention, in suitable camps for five days, of those desirous of leaving for another locality. Those so detained should be examined for detection of carriers.

## COCCIDIOIDAL GRANULOMA

I. ETIOLOGICAL AGENT. *Coccidiodes immitis.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms confirmed by (2) microscopical examinations of fresh discharges, pus, and so forth, bacteriologic examination, and laboratory animal inoculation.

II. SOURCE OF INFECTION. Soil and vegetation.

III. MODE OF TRANSMISSION. Through wounds of skin contaminated with infected soil or vegetation. Inhalation of spores (laboratory workers).

IV. PERIOD OF INCUBATION. Not known.

V. COMMUNICABILITY.

(1) *Period and degree of.* As long as open lesions remain. Probably of slight communicability from person to person.

(2) *Natural and acquired immunity.* None.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Sporadic cases only.

(2) *Age and sex distribution.* Most cases in adult males.

(3) *Racial distribution.* All races susceptible.

(4) *Geographical distribution.* Nearly all cases in California.

(5) *Seasonal distribution.* May occur in any season.

(6) *Mortality.* Low; disease uncommon.

(7) *Case fatality.* Nearly 100 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

Carriers: None outside of the cases themselves.

(2) *Isolation or quarantine.* None.

(3) *Specific therapy.* Doubtful—antimony?

(4) *Prophylaxis.* Neither active nor passive.

(5) *Concurrent disinfection.* Disinfection of discharges from skin lesions, lymph glands and sputa, and articles soiled by them.

(6) *Terminal disinfection.* Not important.

ADDITIONAL SPECIAL MEASURES.

(1) Prompt treatment of all skin wounds, particularly in agricultural workers and other laborers. Laboratory workers must exercise care in handling cultures.

## COMMON COLDS

(Which are Communicable)

I. ETIOLOGICAL AGENT. Undetermined; a number of different organisms may individually or jointly be responsible.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Coryza, and indisposition without other discernible cause.

(2) *Laboratory.* None.

II. SOURCE OF INFECTION. Nasal and mouth discharges of infected persons. A cold atmosphere does not in itself produce a cold, although chilling or fatigue may predispose to it.

III. MODE OF TRANSMISSION. Usually by droplet infection, coughed, sneezed or explosively spoken out into the air; less generally by hand to mouth, or by soiled handkerchiefs, or eating utensils.

IV. PERIOD OF INCUBATION. Brief, usually twelve to twenty-four hours.

V. COMMUNICABILITY.

(1) *Period and degree of.* Communicable as long as causative agents remain in the nose or throat; period not definitely known. Highly communicable in early stages of disease and in epidemics, if cold is of the communicable type. Some so-called colds are due to tobacco or dust or other irritation and are not communicable.

V a. STATISTICAL EPIDEMIOLOGY.

Colds are the most common cause of illness. Between 10 and 15 per cent of the population are affected. Colds are less common in very cold climates. They affect both sexes and all ages, and are of importance because of the amount of disability they cause and the possibility of their breaking down resistance so that other respiratory diseases may develop.

VI. ADMINISTRATIVE MEASURES.

(1) Education of the public in the general laws of personal and public hygiene.
(2) Advise non-association with the infected.
(3) Advocate plenty of pure air and sunlight.
(4) Advise bodily resistance through health habits in regard to diet, exercise, rest, and clothing.
(5) Sanitary disposal of nose and throat discharges from cases.

## DENGUE

I. ETIOLOGICAL AGENT. Undetermined.

I a. DIAGNOSTIC CRITERIA. Practically all clinical.

II. SOURCE OF INFECTION. The blood of infected persons.

III. MODE OF TRANSMISSION. By the bites of infected mosquitoes, *Aedes aegypti,* and possibly *Culex.*

IV. PERIOD OF INCUBATION. Three to ten days.

V. COMMUNICABILITY.

(1) *Period and degree of.* Probably during fever; highly communicable where disease exists.

(2) *Immunity.* Natural immunity, rare; acquired immunity, short-lived.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Occurs in areas where the mosquitoes responsible for spread exist, tropics and subtropics mainly.

(2) *Age and sex distribution.* No differentiation.

(3) *Racial distribution.* Visiting whites most susceptible.

(4) *Geographical distribution.* As above; tropical and subtropical—largely in areas near sea levels.

(5) *Seasonal distribution.* Most prevalent in wet seasons.

(6) *Cyclical distribution.* Nothing marked.

(7) *Mortality.* Very low.

(8) *Case fatality.* Extremely low, under 2 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Reporting should be required wherever there is danger of yellow fever.

Significance of carriers: Not known.

(2) *Isolation.* The patient must be kept in a screened room during fever.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Prophylaxis.* Protection from bites of infected mosquitoes.

(6) *Concurrent disinfection.* None.

(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

Definite measures directed toward the elimination of mosquitoes (*aedes aegypti*). Screening of rooms.

### DIPHTHERIA

I. ETIOLOGICAL AGENT. Diphtheria bacillus, the Klebs-Loeffler bacillus, *Corynebacterium diphtheriae*.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Symptoms usually consist of moderate fever, and moderate sore throat, rapid pulse; lymphatic glands may be swollen, usually with the typical greyish-white adherent membrane on tonsils, pillars, posterior wall of throat or elsewhere. Increasing inspiratory dyspnoea or stridor may be the only symptom in laryngeal cases, and a serosanguinous discharge from the nose the only symptom of nasal diphtheria.

(2) *Laboratory.* Diphtheria bacilli identified presumptively in smear or culture from affected mucosa.

II. SOURCE OF INFECTION. Discharges from diphtheritic lesions of nose, throat, conjunctiva, vagina, and wound surfaces. Secretions from the nose and throat of carriers of the bacillus.

III. MODE OF TRANSMISSION. Directly by personal contact, indirectly by articles freshly soiled with discharges, or through infected milk or milk products.

IV. PERIOD OF INCUBATION. Usually two to five days, occasionally longer if a healthy carrier stage precedes the development of clinical symptoms.

V. COMMUNICABILITY.

(1) *Period and degree of.* Until virulent bacilli have disappeared from the secretions and the lesions. The persistence of the bacilli after the lesions have healed is variable. In fully three-fourths of the cases they disap-

pear within two weeks. In 95 per cent of cases, the bacilli disappear in four weeks. In exceptional cases virulent bacilli remain in the throat and discharges for from two to six months, or even longer. Diphtheria is a freely communicable disease.

(2) *Immunity.* Natural, apparently frequent, increasing with age; acquired, usually permanent.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Endemic and epidemic.

(2) *Age and sex distribution.* Both sexes susceptible. From 25 to 30 per cent of cases and from 50 to 60 per cent of the deaths occur in the age group under five.

(3) *Racial distribution.* Reported incidence is less in Negroes than in whites.

(4) *Geographical distribution.* Commonest in the temperate zone.

(5) *Seasonal distribution.* Disease generally more prevalent throughout the colder months.

(6) *Cyclical distribution.* Increased prevalence occurs in irregular cycles.

(7) *Mortality.* High before the use of antitoxin, toxin-antitoxin, and toxoid. Now markedly decreasing. Rates per 100,000 population in the registration area for 1926 were 7.5, and for 1927, 7.0.

(8) *Case fatality.* Was very high before the use of antitoxin; now it is less than 1 per cent in cases treated within twenty-four hours of onset and usually not higher than 6 or 7 per cent for all cases.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: From 1 per cent to 3 per cent of the urban population during the winter months are carriers of virulent organisms but have little tendency to transmit disease. Known carriers should be warned against contact with children and possible infection of milk. No completely satisfactory method of carrier-control has yet been evolved. Surgery for certain types of cases has generally offered the best means of clearing up the carrier condition.

(2) *Isolation.* Cases should be isolated until two cultures from the throat and two from the nose, taken not less than twenty-four hours apart, fail to show the presence of diphtheria bacilli. Isolation may be terminated if persistent diphtheria bacilli prove avirulent. Where termination by culture is impracticable, cases may be terminated with fair safety as a rule sixteen days after onset of the disease.

It should be remembered that cultures made to detect bacilli in suspected convalescent or healthy carriers are not absolutely reliable. According to the care taken in prying into crypts of tonsils and touching various parts of the nasal pharynx, the results from cultures will vary in their correctness; carelessly made cultures will skip bacilli in at least 30 per cent of cases, while carefully made cultures will do so only in 2 to 5 per cent.

(3) *Quarantine.* Of all exposed persons until shown by bacteriological examination not to be carriers. Because of administrative difficulties this practice is frequently not carried out.

Placarding: Is valuable as a warning to parents of susceptible children.

(4) *Specific therapy.* Treatment by diphtheria antitoxin of cases, or persons showing symptoms of the disease.

(5) *Immunization.*

Prophylaxis: Active: by diphtheria toxoid for infants and preschool children, toxin-antitoxin for school children and for susceptible adults who are subject to repeated exposure. Passive: it is advisable to give antitoxin to little children who have been in close contact with a case of diphtheria even if they are under daily attendance of a physician, as diphtheria not infrequently develops very rapidly in infants and very young children.

(6) *Concurrent disinfection.* Of all articles which have been in contact with the patient and all articles soiled by discharges from the patient.

(7) *Terminal disinfection.* Thorough airing and sunning of the sickroom with cleaning or renovation.

ADDITIONAL SPECIAL MEASURES.

(1) Pasteurization of milk supply.

(2) Active immunization of all preschool children preferably by the end of the first year without prior Schick testing; active immunization of school children with or without prior use of the Schick test. A Schick retest should always be done, if possible, three to six months after giving the toxoid or toxin-antitoxin; otherwise, there is no certainty that any individual child is immune.

(3) Application of the Schick test to all especially exposed persons, such as nurses and physicians, and active immunization of all susceptibles, but not within three weeks after the administration of antitoxin.

(4) Determination of presence or absence of carriers among contacts and, so far as practicable, in the community at large.

Cultures from cases which show diphtheria bacilli, so far as morphological examination permits of identification, should be tested for virulence unless the persons have been in contact with a case of diphtheria. Not only are many bacilli absolutely non-virulent and therefore not dangerous, but many others are so attenuated that they seldom produce diphtheria. As a rule, therefore, cultures are made only when there is some evidence of contact with a diphtheria case.

## DYSENTERY (AMOEBIC)

I. ETIOLOGICAL AGENT. *Endamoeba histolytica.*

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Symptoms may vary greatly from the mild to severe case. Typical symptoms include: gradual onset, slight or no fever, bloody diarrhoea, intermittent abdominal pain, tenesmus, gradual wasting, and cachexia. Many carriers have never suffered any clinical symptoms.

(2) *Laboratory.* The presence of *Endamoeba histolytica* in the stools (either trophozoites or cysts).

II. SOURCE OF INFECTION. Bowel discharges of infected persons.

III. MODE OF TRANSMISSION. By ingestion of infected material. The chief sources are impure water and food, particularly milk, uncooked vegetables and fruits contaminated with human feces. Flies may also transfer the infection.

IV. PERIOD OF INCUBATION. Three to twelve weeks.

V. COMMUNICABILITY.

(1) *Period and degree of.* Throughout the course of the infection. The chronic case,

and particularly the carrier, are much more important sources of infection than the acute case.

(2) *Natural and acquired immunity.* One attack of the disease does not confer immunity. Relapses are common.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Clinical amoebic dysentery is not common in the United States. We have no reliable data as to the actual prevalence of the disease. The death rate is very low.

(2) *Age and sex distribution.* Available evidence indicates that some degree of age immunity exists. It is more prevalent in males.

(3) *Racial variation.* Some races are more resistant to infection than others. The Chinese, for example, are more resistant than Tamils.

(4) *Geographical distribution.* The disease has been reported from all parts of the United States but is rare in the northern portions. It is not uncommon in the southern States, the highest incidence being in the rural portions of the far southern States. The parasite has a wide distribution, being encountered in the stools of a remarkably large proportion, about 10 per cent, of normal persons in the United States.

(5) *Seasonal distribution.* The disease is much more common in the summer than in the winter months. The incidence is highest in the late summer.

(6) *Cyclical distribution.* Not noted.

(7) *Case fatality.* In untreated cases exposed to hardships, and far from hospital care, the case fatality may be 25 per cent. In properly treated cases, even though severe, the death rate should not be greater than 10 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Quarantine.* None.
(2) *Isolation.* None.
(3) *Concurrent disinfection.* Of all bowel discharges and articles soiled by them.

ADDITIONAL SPECIAL MEASURES.

(1) Sanitary disposal of human feces.
(2) Supervision of all foods eaten raw—particularly leafy vegetables.
(3) Protection and purification of water supplies.
(4) Control of fly breeding.
(5) Supervision of food handlers.

## DYSENTERY (BACILLARY)

I. ETIOLOGICAL AGENT. Dysentery bacillus –*B. dysenteriae.* The common types are Shiga and Flexner.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Acute onset, fever, tenesmus, frequent and bloody stools are characteristic diagnostic criteria.
(2) *Laboratory.* The presence of *B. dysenteriae* in the stools.

II. SOURCE OF INFECTION. The bowel discharges of infected persons.

III. MODE OF TRANSMISSION. Ingestion of infected material. Milk and water are less important as vectors than in typhoid fever. Food, contact, and flies are important modes of spread.

IV. PERIOD OF INCUBATION. Two to seven days.

V. COMMUNICABILITY.

(1) *Period and degree of.* Communicable during the acute stages of the disease—three to four weeks. The disease is highly communicable in prisons, camps, and institutions. In civil life its communicability is comparable to typhoid fever.

(2) *Natural and acquired immunity.* Adults are less susceptible than children and attacks are less severe. Immunity develops following an attack.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Bacillary dysentery, particularly in children, is becoming less prevalent each year in the United States. The important factors in this reduction are not definitely determined. No reliable data exist as to actual prevalence, but the most satisfactory index is the decline in the mortality rate from diarrhoeal diseases of children.

(2) *Age and sex distribution.* Children are more seriously affected (probably more frequently affected) than adults.

(3) *Racial distribution.* No variation.

(4) *Geographical distribution.* The disease occurs in all parts of the United States. It is more prevalent in the southern parts of the country.

(5) *Seasonal distribution.* The maximum peak in the northern States occurs in August. In the Gulf Coast States, the maximum is in June. The disease may occur in epidemic form in institutions at any season, but in civil life it is distinctly a "summer" disease.

(6) *Cyclical distribution.* Not noted.

(7) *Mortality.* The best index we have of mortality from dysentery is mortality from diarrhoeal diseases of children. The rate varies greatly in different parts of the United States. It is steadily decreasing.

(8) *Case fatality.* The mortality rate from Shiga dysentery is high, 30 to 50 per cent in some epidemics. Adults seldom die from Flexner type of dysentery. The fatality rate in children is inversely proportional to their age.

Two to five per cent of cases among children are fatal.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
Carriers: Carriers may spread the disease. They have the same significance as in typhoid fever. Some of the large epidemics reported from prisons have been traced to carrier food handlers.

(2) *Isolation.* In fly-proof room. No placarding on outside.

(3) *Quarantine.* Not employed.

(4) *Specific therapy.* Immune serum is of real value in infections with the Shiga strain of the dysentery bacillus. The serum has not proved of great general value in bacillary dysentery due to the multiplicity of strains.

(5) *Prophylaxis.* Vaccines will protect against bacillary dysentery.

(6) *Concurrent disinfection.* Of all bowel discharges and articles soiled by them.

(7) *Terminal disinfection.* Cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Sanitary disposal of human feces.
(2) Education of mothers in the principles of careful preparation of the food of children and infants.
(3) Control of fly breeding.
(4) Protection and purification of public water supplies.
(5) Pasteurization of public milk supplies.
(6) Supervision of other food supplies, and of food handlers.

## Epidemic Encephalitis

I. ETIOLOGICAL AGENT. Not definitely known. Three theories: (1) a filterable virus closely allied to the *herpes virus;* (2) a strain of the green streptococcus; (3) a toxic disturbance of the central nervous system.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Epidemic encephalitis usually begins as an acute or sub-acute infection with a moderate degree of fever, headache, and malaise, often with vomiting and constipation. There are usually symptoms indicating the involvement of the central nervous system. These are of the widest possible range, and may be both organic and functional. Characteristic symptoms, which are not always present, are diplopia, or other cranial nerve palsies, lethargy and asthenia, or insomnia and restlessness, posterior nerve root pains, twitching of groups of muscles, choreiform movements, catatonia, delirium or other psychic disturbances, changes in reflexes, especially of the pupillary reflexes. After the acute stage of the disease, which is very variable in duration, the patient may entirely recover or he may recover for several months or years, and then develop the chronic stage of the disease, or he may pass directly into the chronic stage. Relapses and periods of exacerbation are not uncommon.

(2) *Laboratory.* The spinal fluid may be normal, but in the majority of cases there is a variable increase in cells with a preponderance of mononuclears, a slight to moderate increase in protein, and a normal or high sugar. The examination of the spinal fluid is particularly of value in ruling out other acute infections of the central nervous system. The blood count is not characteristic. There is often a mild to moderate increase in the white blood cells, sometimes with a relative mononucleosis.

II. SOURCE OF INFECTION. Not definitely known; probably the secretions of the nasopharynx.

III. MODE OF TRANSMISSION. Not definitely known; presumably by contact with patients, or more especially with carriers.

IV. PERIOD OF INCUBATION. Little information available, since there is so rarely a history of direct contact. Periods varying from one day to two months have been cited and an average of perhaps ten days has been suggested. These figures are probably unreliable.

V. COMMUNICABILITY.

(1) *Period and degree of.* Period of communicability unknown. Degree also unknown; probably very low.

(2) *Natural and acquired immunity.* Most persons evidently have a high degree of immunity since there are so few records of individuals contracting the disease by exposure. This immunity is probably natural, rather than acquired, since the disease has been prevalent too short a time for most adults to have developed an acquired immunity.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Very few acute cases are being reported at the present time.

(2) *Age and sex distribution.* While all ages are affected, the largest proportion of cases is between ten and thirty years of life. There is somewhat greater incidence among males than among females.

(3) *Racial distribution.* The disease has occurred among all races, but from the figures available the incidence is low among Negroes.

(4) *Geographical distribution.* The disease is spread all over the world. The incidence is

particularly high in Europe and in the United States.

(5) *Seasonal distribution.* The incidence of the disease has been high during the winter months as a rule.

(6) *Cyclical distribution.* The disease has not been studied long enough to collect definite data on this subject. In 1919–20 and in 1924 the largest numbers of cases were reported throughout the world.

(7) *Case fatality.* The case fatality has varied greatly in different outbreaks. An average of 25–30 per cent is generally accepted. These figures are unreliable as many acute cases are never reported.

(8) *Mortality.* The mortality has been very low, varying from six-tenths to one and eighty-four hundredths for every hundred thousand, in the years of greatest prevalence. Data on this subject are lacking in most countries.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: It is impossible to detect carriers. It seems probable, however, that the disease may be spread largely by means of carriers.

Reporting: Reporting of cases for statistical information.

(2) *Isolation.* Probably unnecessary on account of the low degree of communicability.

(3) *Quarantine.* As above.

(4) *Specific therapy.* Unknown.

(5) *Prophylaxis.* Active and passive unknown.

In view of the low degree of communicability of the disease no administrative procedures seem necessary except the reporting of cases for statistical information, and in order that measures may be instituted in case of evidence of a marked local increase.

## GERMAN MEASLES

## (Rubella)

I. ETIOLOGICAL AGENT. Undetermined.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* A mild disease; onset with mild catarrhal symptoms for one day or more, followed by enlargement of postauricular lymph glands and an erythematous macular eruption beginning on the face; usually complete in forty-eight hours, seldom more than seventy-two. Eruption diffuse, finely blotchy on face, but on body and extremities eruption is mostly discrete, red, and macular.

(2) *Laboratory.* None, except absence of leukocytosis.

II. SOURCE OF INFECTION. Secretions of the mouth and possibly of the nose.

III. MODE OF TRANSMISSION. By direct contact with patient or with articles freshly soiled with discharges from the nose or throat of the patient.

IV. PERIOD OF INCUBATION. From fourteen to twenty-one days, usually about sixteen days.

V. COMMUNICABILITY. Infectious from beginning of catarrhal symptoms; most infectious during acute period. Definite period of communicability unknown; probably four days, not longer than seven.

(1) *Degree of communicability.* Highly communicable.

(2) *Immunity.* One attack usually confers immunity.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Appears in epidemics—many cases not recognized and never reported.

(2) *Age and sex distribution.* Occurs in childhood mostly, but more frequent in adults

than measles. Males and females equally susceptible.

(3) *Racial distribution.* Nothing known.

(4) *Geographical distribution.* More prevalent in urban than in rural areas.

(5) *Seasonal distribution.* Most prevalent in winter and spring.

(6) *Mortality and fatality.* Practically none.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*
Reporting is desirable because this disease may be confused with scarlet fever during its early stages.

(2) *Isolation.* Of no value.

(3) *Quarantine.* Of no value.

(4) *Specific therapy.* None.

(5) *Prophylaxis,* specific. None.

(6) *Concurrent disinfection.* None.

(7) *Terminal disinfection.* None.

## GLANDERS

I. ETIOLOGICAL AGENT. Glanders bacillus. *Pfeifferella mallei.*

I a. DIAGNOSTIC CRITERIA.

(1) *Laboratory.* By specific biological reactions, such as the complement fixation test, the mallein test, the agglutination test, or by non-specific reactions, such as the Strauss reaction, if confirmed by culture, or by identification of the *Bacillus mallei,* or by autopsy of the doubtful cases.

II. SOURCE OF INFECTION. Discharges from open lesions of mucous membranes, or of the skin of human or equine cases of the disease (i.e., pus and mucus from the nose, throat, and discharges from skin lesions, bowel discharges from infected man and horse).

III. MODE OF TRANSMISSION. Contact with a case or with articles freshly soiled by discharges from a human or equine case.

IV. PERIOD OF INCUBATION. Unknown.

V. COMMUNICABILITY. Until bacilli disappear from discharges, or until lesions have healed.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.* Carriers: Not known in humans.

(2) *Isolation.* Human case at home or hospital; for infected horses, destruction rather than isolation is advised. Skin contact with the lesions in the living or dead body is to be scrupulously avoided.

(3) *Quarantine.* Of all horses in an infected stable until all have been tested by specific reaction, and the removal of infected horses and terminal disinfection of stable have been accomplished.

(4) *Concurrent disinfection.* Discharges from human cases and articles soiled therewith.

(5) *Terminal disinfection.* Stables and contents where infected horses are found.

ADDITIONAL SPECIAL MEASURES.

(1) The abolition of the common drinking trough for horses.

(2) Sanitary supervision of stables and blacksmith shops.

(3) Semi-annual testing of all horses by a specific reaction where the disease is common.

(4) Testing of all horses offered for sale where the disease is common.

## GONORRHEA

(Including Reference to Ophthalmia Neonatorum and Vulvovaginitis)

I. ETIOLOGICAL AGENT. Gonococcus, *Neisseria gonorrhoeae.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms confirmed by (2) bacteriological examination, with or without serum reaction.

II. SOURCE OF INFECTION. Discharges from lesions of inflamed mucous membranes and glands of infected persons; viz., urethral, vaginal, cervical, conjunctival mucous membranes, and Bartholin's or Skene's glands in the female, and Cowper's and the prostate glands in the male.

III. MODE OF TRANSMISSION. Adult genital tract, by sexual intercourse; in children, by contact with the infected persons or articles soiled by gonorrheal discharges; ophthalmia neonatorum (acute infectious conjunctivitis), from the birth canal of the mother.

IV. PERIOD OF INCUBATION. One to fourteen days, usually three to five days.

V. COMMUNICABILITY.

(1) *Period and degree of.* As long as the gonococcus persists in any of the discharges, whether the infection be an old or a recent one. Grade, high in sexual intercourse; high to female children in non-sexual contacts and to infant eye; low to adult eye.

(2) *Immunity.* Natural—None. Acquired immunity not general, but probably a transient local immunity develops during infection.

V a. STATISTICAL EPIDEMIOLOGY. Gonorrheal infection is one of the main causes of disability, but in itself is not an important cause of death. For the registration area of the United States, in the years 1926 to 1928, it stood nineteenth in the list of communicable diseases for deaths under twenty years of age. Of all deaths due to the infection, 15.3 per cent belonged to the above age group while 3.8 per cent of the deaths were under one year.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Reporting of cases: All cases should be reported. Report immediately all cases of ophthalmia neonatorum to the local health department by telephone or telegraph to insure prompt treatment.

Carriers: The carriers are the chronic cases that may exhibit no special signs of infection. These are often spreaders of disease; a female may remain a carrier for two or three years and the male for a year or more. Such persons should not indulge in sexual intercourse and should not be in close contact with female children until, after repeated examinations, no gonococci can be found.

(2) *Isolation.* Important in gonorrheal ophthalmia and in gonorrheal vulvovaginitis in children. Abstinence from sexual intercourse so long as discharges contain the gonococci.

(3) *Placarding.* Unnecessary except for non-cooperative patients.

(4) *Specific therapy.* None satisfactory.

(5) *Prophylaxis.* Use of soap and water immediately after exposure, injection of recognized non-irritating silver preparations. Less effective in the female. In ophthalmia neonatorum, instillations of recognized non-irritating silver preparations.

ADDITIONAL SPECIAL MEASURES.

(1) Follow-up of patients who discontinue treatment.
(2) Reports on and follow-up of sources of infection.
(3) Free clinics for indigent patients.
(4) Free laboratory service.

(5) Free prophylaxis and hospital treatment for gonorrheal ophthalmia.

(6) Information service for physicians, patients, and the public.

(7) Repression of prostitution and associated use of alcoholic beverages by the proper authorities.

(8) Restriction of advertising and sale of remedies for self-treatment.

(9) Promotion of prompt and adequate personal prophylaxis for all who expose themselves.

(10) No person affected with gonorrhea in the infective stage should engage in any occupation which involves intimate contact with children.

(11) In the case of infection in infant and juvenile females, commonly known as vulvovaginitis, exclusion from schools or contact with other children as long as there is a discharge; and periodic clinical and microscopical examination.

(12) Education in matters of sex hygiene, including the broad sex principles underlying character building, self-control, health habits, also the fact that continence is compatible with health and normal development.

## HOOKWORM DISEASE

I. ETIOLOGICAL AGENT. In the United States and its possessions, *Necator Americanus.*

I a. DIAGNOSTIC CRITERIA. Laboratory criteria are absolute. A few hookworms may produce no definite clinical symptoms. The diagnosis is made on finding the characteristic ova in the stools. Caldwell's or Willis' flotation methods are the best. A simple smear will usually be positive if over twenty worms are present.

II. SOURCE OF INFECTION. Usually feces from polluted soil.

III. MODE OF TRANSMISSION. The ova of the worms are scattered carelessly upon the soil. Here they develop in five to eight days and the larvae enter the unbroken skin, usually of the feet. Infection by mouth is possible but infrequent as compared with by skin.

IV. PERIOD OF INCUBATION. The free-living form of the larvae may exist in the soil under optimum conditions for several weeks. No incubation period corresponding to that for bacterial diseases. Eggs are found in the stools in about four to six weeks after the larvae penetrate the skin.

V. COMMUNICABILITY. The patient becomes a "carrier" in that he will discharge ova in his feces as long as mature female worms live in the intestines (several years).

(1) *Period and degree of communicability.* An individual can only infect others by the indirect method of careless disposal of feces upon the soil. As long as mature female worms are in the intestine, eggs if deposited in warm moist soil become infective. Under such conditions, highly communicable.

(2) *Natural and acquired immunity.* There seems to be some acquired immunity to the parasite, but this is a relative thing, and is seldom seen in children. Racial immunity exists. Negroes are less heavily infected than whites.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* The disease is becoming less prevalent each year. Data from 1925, for example, have little significance for 1930. The most heavily infested sections of the United States are in the southern States where in some places 75 per cent or more of the rural children of school age are infested.

(2) *Age and sex distribution.* Heavy infestation mostly limited to white rural children of school age. Adults and young children usually harbor only small numbers.

(3) *Racial distribution.* In Negroes infestation is lighter than in whites.

(4) *Geographical distribution.* Hookworm disease does not exist in an area with a clay soil and is limited to rural regions in the sandy soil sections of the southern States.

(5) *Seasonal distribution.* Infestation occurs most in summer and in damp seasons.

(6) *Mortality.* Very low mortality rate.

(7) *Case fatality.* Very low case fatality rate.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: Each case is a "carrier." The cases should be treated and facilities for proper disposal of their feces should be provided.

(2) *Isolation.* None.

(3) *Quarantine.* None.

(4) *Specific therapy.* Carbon tetrachloride, or oil of chenopodium, are both very satisfactory. It is essential to administer the treatment with great care, as these anthelmintics are toxic.

(5) *Prophylaxis.* Proper disposal of human feces. Mass treatment combined with sanitation. Wearing of shoes.

(6) *Concurrent disinfection.* Sanitary disposal of bowel discharges to prevent contamination of soil and water.

(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Provision for installation of sanitary toilets, particularly in rural areas.

(2) Treatment of cases of hookworm disease.

(3) Education as to mode of spread and methods of prevention.
(4) Development of full-time county health departments as a means of improving sanitation.

### Impetigo Contagiosa

I. ETIOLOGICAL AGENT. Presumably cocci, chiefly streptococci and staphylococci and other undetermined pyogenic organisms.

I a. DIAGNOSTIC CRITERIA. Clinical: Vesicular and crusting lesions, most commonly on the face.

II. SOURCE OF INFECTION. Lesions of skin, commonly on exposed surfaces.

III. MODE OF TRANSMISSION. Direct contact, usually one child with another—also autoinoculable.

IV. PERIOD OF INCUBATION. Undetermined.

V. COMMUNICABILITY. While lesions contain pus and remain unhealed.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*
(2) *Isolation.* In severe cases, children should be prevented from having contact with others.
(3) *Quarantine.* None.
(4) *Specific therapy.* None.
(5) *Prophylaxis.* None.
(6) *Concurrent disinfection.* Of all articles used by patient.
(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Prevention of the common use of utensils such as hair brushes, combs, cups, towels, and so forth.
(2) Adequate treatment.

## INFLUENZA, EPIDEMIC

I. ETIOLOGICAL AGENT. Presumably a specific micro-organism as yet unidentified, or perhaps a group of related organisms. In addition to this supposed primary and specific micro-organism, streptococci, pneumococci, and various other bacteria play an important rôle in the disease, especially in its more severe complications.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Epidemiological: Diagnosis rests upon the occurrence, in large numbers and over a wide area, of cases which typically show: fairly sudden onset; fever, approximately 102° F. or higher, lasting one to seven days; excessive prostration; aching pains in back and limbs; coryza and bronchitis, and frequent occurrence of pneumonia as a complication or sequel. During an epidemic in which such cases are prominent, the diagnosis of influenza is commonly extended by epidemiological association to numerous other cases of less distinctive clinical type in many of which the diagnosis would not be made independent of this association; hence, the clinical boundaries of influenza are quite indefinite.

(2) *Laboratory.* Marked leukopenia in a considerable proportion of uncomplicated cases is confirmatory of the diagnosis.

II. SOURCE OF INFECTION. Persons suffering from the disease, also probably missed cases and carriers. Lower animals are not believed to harbor the infection.

III. MODE OF TRANSMISSION. Supposedly by direct transfer of respiratory secretions from infected individuals to the respiratory tract of susceptibles.

IV. PERIOD OF INCUBATION. Not definitely ascertained. Probably as a rule from one to three days.

V. COMMUNICABILITY.

(1) *Period of communicability.* Communicable in the early stages of illness, probably also in the prodromal stage, and quite possibly in convalescence. Nothing is known of the duration of infectivity of supposed carriers.

(2) *Grade of communicability.* High.

(3) *Immunity.* Natural: Natural resistance to infection is to be inferred from the fact that a considerable proportion, usually from 25 to 75 per cent of people, escape the recognizable disease, even when intimately exposed. Acquired: The same individuals may suffer repeated attacks in successive epidemics at intervals of a year or less; hence, it appears that if an attack confers any immunity, it is of short duration and probably of low grade, or perhaps is effective only against certain strains of the virus.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Not exactly determinable because of indefinite clinical boundaries. In distinct epidemics, the community attack rate from recognized influenza, in so far as can be ascertained, varies from less than 10 to more than 50 per cent of the population within a period of six to twelve weeks.

(2) *Age and sex distribution.* Incidence is usually high between the ages of five and fifteen. Attack rates are slightly higher in females than in males but the differences are not great.

(3) *Racial distribution.* Nothing definite is known as to relative susceptibility of different races.

(4) *Geographical distribution.* Occurrence worldwide. Relative prevalence in different parts

of the world not ascertained and apparently variable in different epidemics.

(5) *Seasonal distribution.* Epidemics occur at all seasons, but principally in the months from December to May in the Northern Hemisphere and in the corresponding season in the Southern Hemisphere.

(6) *Cyclical distribution.* The great pandemics have occurred at intervals which are irregular, but relatively long, usually of several decades. The epidemics of less than world-wide extent which have commonly followed pandemics have shown some indications of a periodicity.

(7) *Case fatality.* Extremely variable in different epidemics and in different communities during the same epidemic. Usually less than 1 per cent, based on recognized cases. Apt to be relatively high in infants, aged persons, women in the late stages of pregnancy, and, in certain epidemics, in young adult males.

(8) *Mortality.* Extremely variable and difficult to ascertain. Deaths certified as due to influenza are to some extent an index but not at all a measure of mortality attributable to this disease. The most reliable measures of mortality during an epidemic are: (1) the excess of deaths from all acute respiratory diseases, or (2) the excess of deaths from all causes over an appropriate norm established for the place and season. On this basis, recent epidemics in the United States have caused excess mortalities ranging from 10 to 500 per 100,000.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

(2) *Isolation.* Isolation of the sick during acute stage of the illness. It is of special impor-

tance for severe cases and for those complicated by pneumonia.

(3) *Quarantine.* Placarding not recommended but visiting should be discouraged. No restrictions on familial contacts.

(4) *Specific therapy.* None.

(5) *Immunization.* None.

(6) *Concurrent disinfection.* Of discharges from the nose and throat.

(7) *Terminal disinfection.* By airing and cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) General measures should be directed toward reducing unnecessary and avoidable crowd contact, but with care to refrain from too stringent measures, since the most rigid restrictions which can be carried out by an ordinary community will not suffice to prevent.

(2) Community quarantine is recommended only for institutions and small, exceptionally isolated communities where such a measure is practicable without excessive inconvenience.

(3) Under certain administrative conditions the use of masks may prove effective.

(4) Provision for care of the sick.

(5) Advice to the general public to go to bed immediately on appearance of symptoms.

## LEPROSY

I. ETIOLOGICAL AGENT. Leprosy bacillus, *Mycobacterium leprae.*

I a. DIAGNOSTIC CRITERIA. (1) Clinical manifestations of skin and nervous system, to be confirmed in most cases by (2) microscopical examination of smears of sections.

II. SOURCE OF INFECTION. Discharges from lesions.

III. MODE OF TRANSMISSION. Usually close, intimate, and prolonged contact with infected individuals.

Flies and other insects may be mechanical carriers.

IV. PERIOD OF INCUBATION. Prolonged, undetermined, usually years.

V. COMMUNICABILITY. Uncertain, but generally only a small proportion of population attacked.

V a. STATISTICAL EPIDEMIOLOGY. Incidence among males usually about double that among females. Attacks usually adolescents and young adults. Disease appears not to be communicable in certain regions.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

(2) *Isolation.* In a leprosarium where this is possible, at least until healing of all lesions of skin and mucous membranes and the patient has been observed with the disease in this arrested form for not less than six months.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Immunization.* None.

(6) *Concurrent disinfection.* Discharges and articles soiled with discharges.

(7) *Terminal disinfection.* Thorough cleansing of living premises of the patient.

ADDITIONAL SPECIAL MEASURES.

(1) Lack of information as to the determining factors in the spread and communication of the disease makes any but general advice in matters of personal hygiene of no value.

(2) As a temporary expedient, lepers may be properly cared for in local hospitals, or if conditions of the patient and his environment warrant, he may be allowed to remain on his own premises under suitable regulations.

(3) In many parts of the world leprosy shows no tendency to spread. This is true of the northern part of the United States. This fact is of much importance in connection

with the public health handling of the disease. Leprosy is not an important cause of death in young people in the United States. In 1926 there was only one death under twenty years from the disease; in 1927 and 1928 there were no deaths under twenty years.

## MALARIA

I. ETIOLOGICAL AGENT. Animal parasite of the class Sporozoa, genus *Plasmodium,* or *Laverania.* There are at least three types of parasite, the tertian (*P. vivax*), aestivo-autumnal (*L. falciparum*), and quartan (*P. malariae*). The first is the most common type found in the United States, the second is less common, the last is rare.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Characteristic symptoms of regularly recurring attacks of chills and fever accompanied by an enlarged spleen.

(2) *Laboratory.* Presence of the malaria parasites in the blood film.

II. SOURCE OF INFECTION. The blood of an infected individual.

III. MODE OF TRANSMISSION. The disease is transmitted through the bite of the anopheles mosquito. The most important vector in the United States is *A. quadrimaculatus.*

IV. PERIOD OF INCUBATION. About twelve to fourteen days.

V. COMMUNICABILITY.

(1) *Period of communicability.* So long as the adult parasites persist in the circulating blood in sufficient quantities to infect mosquitoes. In untreated cases this period may last for months.

(2) *Immunity.* Natural: Negroes are less susceptible to the ravages of malaria. Ac-

quired: A degree of relative immunity to the infection is acquired after repeated attacks of the disease. Good nutrition is believed to be a factor in increasing resistance to the ravages of the disease.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* The disease is becoming less prevalent in the United States each year. Most data as to malaria prevalence are too high. The common statement that 1,000,000 persons in the United States suffer from malaria each year is an exaggeration. In general, the disease is limited to rural areas, and certain limited sections of the United States. We have no reliable data as to the prevalence of malaria, but we are certain that both the mortality and morbidity rates are falling year by year.

(2) *Age and sex distribution.* Children are more severely and more frequently affected than adults.

(3) *Racial distribution.* Negroes are less affected than whites.

(4) *Geographical distribution.* As a public health problem, the disease is limited at present to the coastal plane of southeastern States and to the Mississippi valley below St. Louis, Mo. West of the Mississippi River, the States of Texas, Louisiana, Arkansas, southern Missouri, and California have some malaria. In the lowlands of Porto Rico and in the Philippines, malaria is a very serious problem, but not in Hawaii.

(5) *Seasonal distribution.* Tertian malaria is common during the early summer months. Aestivo-autumnal malaria is commonest in the early autumn. Relapses often occur in the spring months.

(6) *Cyclical distribution.* Cyclical distribution is

established. Years of high incidence are apparently correlated with high rainfall in the spring and summer, and vice versa.

(7) *Mortality.* Rate is most variable and is low.

(8) *Case fatality.* Varies for the different types of parasite. In pernicious, untreated, aestivo-autumnal malaria, it may be 10 per cent to 30 per cent. Untreated, benign tertian malaria has a case fatality rate of less than 5 per cent.

## VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: Every case may become a carrier, particularly if untreated. Plasmochin may prove a satisfactory means of sterilizing the blood of carriers.

(2) *Isolation.* The individual harboring malaria parasites in his blood should be protected from the bites of mosquitoes. With the exception of this simple measure, isolation, quarantine, etc., are of no avail.

(3) *Quarantine.* As above.

(4) *Specific therapy.* Quinine sulphate or some of the other salts of quinine. Plasmochin seems to be specific for the adult sexual form of the parasite.

(5) *Prophylaxis.*

(a) Treatment of cases of the disease.

(b) Control of breeding places of anopheles mosquitoes.

(6) *Concurrent disinfection.* None. Destruction of anopheles mosquitoes in the sick room.

(7) *Terminal disinfection.* As above.

### ADDITIONAL SPECIAL MEASURES—IN UNITED STATES

(1) Control of anopheles quadrimaculatus breeding for the radius of its flight range from habitations.

(2) Encourage protective measures to prevent mosquitoes from biting the population by screening or other methods.

(3) Treatment of cases with quinine; carriers of adult parasites with plasmochin.

(4) Education as to mode of spread and methods of prevention.

## MEASLES

### (Rubeola)

I. ETIOLOGICAL AGENT. Undetermined, except that it is a filterable virus.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* If known to have been exposed or disease is prevalent: fever, coryza, injection of conjunctivae, cough, Koplik spots. Otherwise significance of these symptoms usually overlooked or they are not noted.

(2) *Laboratory.* None.

II. SOURCE OF INFECTION. Mouth and nasal secretions of an infected individual.

III. MODE OF TRANSMISSION. Usually through direct contact with case. Instances of indirect contact seem to be authentic but this mode is of importance only in institutions caring for infants and small children.

IV. PERIOD OF INCUBATION. Usually about eight to ten days from exposure to initial fever, twelve to fourteen days to rash. Shorter incubation periods unusual and difficult to authenticate. Occasionally longer periods up to eighteen days. When convalescent serum has been used the incubation period may last even longer, at least up to twenty-one days.

V. COMMUNICABILITY.

(1) *Period and degree of.* Communicable from onset of catarrhal symptoms until five days after appearance of the rash. One of the

most easily transmissible of the communicable diseases.

(2) *Immunity.* Natural: Natural immunity during first three to six months of life of children born of mothers who have had the measles. Occasional instances of a natural immunity lasting through life or well into maturity occur. Acquired: A vast majority, probably over 90 per cent, of those reaching twenty years of age have acquired an active immunity through having had an attack. (Passive—See (4), page 147.)

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Very prevalent. Probably 80–90 per cent of all persons surviving to the twentieth year of life have had an attack.

(2) *Age and sex distribution.* Most prevalent in the age groups five to nine and ten to fourteen; 75–80 per cent of cases occur before fifteenth year. Reported cases show only 15–20 per cent reported under the fifth year, but this is probably an understatement as such cases are not as well reported as those of older children. Age distribution also varies with size of community, living conditions of family, presence of older non-immune children in family, etc. More males than females are attacked during childhood; more women than men in adult life.

(3) *Racial distribution.* Attacks all races. Higher fatality rates noted among Negroes and Indians are more likely due to living conditions, and inadequate medical and nursing care than to inherent hypersusceptibility.

(4) *Geographical distribution.* All parts of the world. Remote places, however, may be attacked at infrequent intervals.

(5) *Seasonal distribution.* Greatest prevalence in United States March to June; lowest August

to October. Outbreaks may occur at any time of year but infrequent during latter period.

(6) *Cyclical distribution.* Occurs characteristically in epidemics, the frequency of which for any community roughly depends upon: (1) its proximity to a large center; (2) its size (the larger the more frequent); (3) the amount of travel between it and other places. Other less tangible factors operate, but in the main, the frequency of epidemics depends upon: (a) the interval necessary to recruit a sufficient number or a sufficient concentration of susceptibles; and (b) the facility with which the infection may be introduced among them.

(7) *Mortality.* Total mortality reported from registration area varies roughly from 2,500 to 8,500 deaths per annum, or 5 to 10 per 100,000.

(8) *Fatality.* Fatality rate for all persons attacked probably not over 3 or 4 per thousand cases. Varies greatly with age, physical condition, and social and environmental conditions. Fatality rates up to 35 per cent have been noted in infant asylum outbreaks, due to the enhancement of the usual risk in young children by the prevalence of rickets and other forms of malnutrition, the overcrowding, and inadequate nursing and hygienic care. In whatever degree these factors operate in community life they serve to increase the fatality rate. The fatality rates by age probably approximate 30–50 per thousand cases in children under one year, 15–30 per thousand at age one, 10–15 at age two. Between five and fourteen the fatality rate is probably not more than 1 or 2 per thousand cases, gradually increas-

ing during adult life to approach in old age the rates of early childhood.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

Carriers: Not known to exist.

Reporting: Every effort should be made to secure complete reporting and to discover susceptibles who by their physical condition would make infection especially hazardous.

(2) *Isolation.* Isolation primarily for benefit of patient (to reduce promiscuous contact and likelihood of secondary infections) except in institutions caring for young or defective children. Isolation at very onset or before may protect young children. Probably easier, however, to isolate children under two years old to prevent their contact with older children who have been definitely or probably exposed. In hospitals and institutions complicated cases must be strictly isolated.

(3) *Quarantine.* Of premises and contacts discourages reporting through the inconvenience and annoyance thereby caused. As a large number of the actual cases are unreported under such circumstances the practice has no effect on the rate or the extent of spread. Quarantine of institutions for young children and of exposed wards in them is of some value. Wards containing very young children should be strictly quarantined if measles appears in the institution.

Placarding, like quarantine, discourages reporting and has no appreciable effect on the spread. The warning to neighbors is much better accomplished through personal visits to mothers of the neighborhood, telling them of the presence of the disease, how to recognize it, its dangers, especially to young children, the desirability of reporting it, and the need for adequate medical and nursing care.

(4) *Immunization.*

Active: None.

Passive: Passive immunity lasting a few weeks (possibly as long as four weeks) may be conferred by the injection of convalescent serum or whole blood of immunes. Dose of former 4–10 cc.; of latter 20–50 cc., according to size. Citrated whole blood may be used but the amount should be increased 20 per cent. If possible the blood of several persons should be mixed so as to have an average potency. This must be given within five days of exposure to prevent, or on fifth or sixth day to modify. Reports generally favorable but has failed to protect or modify, in a number of instances outbreaks in institutions.

Non-specific prophylactic. Prevention and cure of rickets, malnutrition, and so forth, reduces frequency of complications and deaths.

(5) *Concurrent disinfection.* Beyond that demanded by esthetic considerations disinfection is of no tangible value except in institutions—and that needed to prevent transmission through medical and nursing attendants.

(6) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

Should be designed primarily to reduce mortality. Infants in asylums should be kept in best possible condition, special attention being given to prevention and cure of rickets. Such institutions should in effect be quarantined during outbreaks in vicinity, and if invaded, special attention should be given to care of those attacked. Convalescent serum, or in its absence citrated blood or serum of adults who have had measles should be given, if available, to children under three, but should not be relied upon alone. With a potent serum the disease will usually either be modified or prevented. In the community at large, extra nursing personnel should be employed. Cases should be investigated to ascertain family contacts under three years of age so that the parents may be instructed in the particular danger of measles to these children and shown how best to arrange for the care of the sick and those who will probably come down later. Families in the neighborhood who have children of this age, or physically handicapped children, should also be visited and instructed, and efforts made to improve physical condition if impaired. Convalescent serum should be made available for use in suitable cases. Adequate medical and nursing care should be provided for the indigent, and in exceptional circumstances hospitalization should be provided. Cases should be isolated for their own protection.

## MENINGOCOCCUS MENINGITIS

I. ETIOLOGICAL AGENT. Meningococcus, *Neisseria intracellularis* or closely allied species.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Usually sudden onset, fever, headache, nausea, rigidity of the neck, and sometimes in epidemics, petechial spots on the skin.

(2) *Laboratory.* The presence of the organism in the spinal fluid; in early stages it may sometimes be found by blood culture.

II. SOURCE OF INFECTION. Discharges from the nose and mouth of infected persons. Clinically recovered cases, and healthy persons who have never had the disease but have been in contact with cases of the disease or other carriers, act as carriers and are commonly found, especially during epidemics. Such healthy carriers are not uncommonly found independent of epidemic prevalence of the disease.

III. MODE OF TRANSMISSION. By direct contact with infected persons or carriers harboring the causative agent in the upper respiratory tract. There is the possibility of spread by articles soiled by nasal and mouth discharges from such persons, but as the causative agent dies rapidly outside the human body the probability of spread by this means is slight.

IV. PERIOD OF INCUBATION. Two to ten days; tends to be short in epidemics. In rare cases where a carrier develops the disease, the period may be longer.

V. COMMUNICABILITY.

(1) *Period and degree of.* Communicable during the clinical course of the disease and until the specific organism is no longer present in the nasal and mouth discharges of the patient. The organism usually disappears from the nasopharynx in two weeks from onset of disease. This is also about the duration of the carrier state. Infection is fairly widespread at all times, but except during epidemic periods clinical cases are rare. The disease is one of low infectivity.

(2) *Immunity.* Natural: There is usually a natural resistance to the disease except in severe epidemics. Acquired: The extent of immunity from having the disease is unknown.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Slight except in epidemics.

(2) *Age distribution.* Ordinarily most cases occur among children one to ten years and in

young adults. Frequency is higher in the older age groups, but no age group is immune.

(3) *Racial distribution.* The disease is more prevalent among dark-skinned races than among whites.

(4) *Geographical distribution.* It is a disease of all climates.

(5) *Seasonal distribution.* Epidemics may occur at any time but usually occur in winter or spring.

(6) *Cyclical distribution.* No regular cyclical recurrence.

(7) *Mortality.* Usually low, except in epidemics; death rates of 1.3 and 1.6 per 100,000 population for registration area in 1926 and 1927.

(8) *Case fatality.* Between 15 and 75 per cent.

## VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
Carriers: The healthy carrier is probably the most important factor in the spread of the disease, but bacteriological control is usually impractical.

(2) *Isolation.* Isolation and placarding are advisable. Two weeks is an arbitrary period and is usually sufficiently long.

(3) *Prophylaxis.* Active: None practical. Passive: None.

(4) *Specific therapy.* Highly potent anti-meningococcus serum of suitable type specificity is believed by most observers to be of value, but no adequate criterion of potency is available except local clinical experience.

(5) *Concurrent disinfection.* Of discharges from the nose and mouth and of articles soiled therewith.

(6) *Terminal disinfection.* Cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Education as to personal cleanliness and necessity of avoiding contact and droplet infection.

(2) Prevention of overcrowding such as is common in living quarters, transportation conveyances, working places, and places of public assembly in the civilian population, and in inadequately ventilated closed quarters in barracks, camps, and ships among military units.

EPIDEMIC MEASURES.

Increase the separation of individuals and the ventilation in living quarters for such groups of people as are especially exposed to infection because of their occupation or some necessity of living conditions. Chilling, bodily fatigue, and strain should be minimized for those especially exposed to infection.

## Mumps

I. ETIOLOGICAL AGENT. Undetermined.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Inflammation of Stenson's duct may assist in early diagnosis. Diagnosis is usually determined by history of contact, or swelling of parotid gland (below and in front of the ear). The gland on one side is usually affected first, to be followed in a day or two by the other. The disease may be limited to other salivary glands.

(2) *Laboratory.* Findings of no value for diagnosis.

II. SOURCE OF INFECTION. Secretions of the mouth and possibly of the nose.

III. MODE OF TRANSMISSION. By direct contact with an infected person or with articles freshly soiled by the secretions or discharges from the mouth or nose of infected persons. Carriers and missed cases may be factors in the spread of the disease.

IV. PERIOD OF INCUBATION. From twelve to twenty-six days. The most common period, eighteen days, is accepted as usual. A period of twenty-one days is not uncommon.

V. COMMUNICABILITY.

(1) *Period and degree of.* Limit of communicability is undetermined, but assumed to be from first symptoms or earlier until enlargement of the gland has disappeared, seldom more than twelve days after onset. Mumps has a high degree of communicability; practically everyone is susceptible.
(2) *Immunity.* One attack usually confers immunity but second attacks occur.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* The disease is one of the less frequent of diseases common among children—so far as known all persons are susceptible.
(2) *Age and sex distribution.* Most cases occur between ages of five and fifteen. Both sexes are susceptible with more cases reported among males.
(3) *Racial distribution.* No racial immunity.
(4) *Geographical distribution.* Not limited geographically.
(5) *Seasonal distribution.* Not restricted, although most cases occur in winter and spring.
(6) *Cyclical distribution.* No clear-cut cyclical distribution.
(7) *Mortality.* Rate is very low.
(8) *Case fatality.* Extremely low.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

(2) *Isolation.* Isolation of the patient from young children and susceptible young people should be advised for the period of communicability, particularly in institutional outbreaks.

(3) *Quarantine.* Not required.

(4) *Specific therapy.* None.

(5) *Prophylaxis.* Whole blood or serum from persons who have recently recovered from the disease gives beneficial results in preventing infection among contacts.

(6) *Concurrent disinfection.* Of all secretions and discharges from the mouth and nose of patients should be practiced.

(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

In lodging houses, boarding schools, and institutions, where the spread would be for the most part among adults or adolescents, isolation of cases and known contacts is apparently justifiable.

## Paratyphoid Fever

I. ETIOLOGICAL AGENT. Paratyphoid bacillus A or B or C; *Salmonella paratyphi; Salmonella schottmulleri; Salmonella herschfeldi.*

I a. DIAGNOSTIC CRITERIA. Clinical symptoms confirmed by specific agglutination test, and by bacteriological examination of blood, bowel discharges, or urine.

II. SOURCE OF INFECTION. Bowel discharges and urine of infected persons, and water or foods contaminated with such discharges of infected persons or of healthy carriers.

III. MODE OF TRANSMISSION. Directly by personal contact; indirectly by contact with articles freshly soiled with the discharges of infected persons or through milk, water, or food contaminated by such discharges.

IV. PERIOD OF INCUBATION. Four to ten days; average, seven days.

V. COMMUNICABILITY.

(1) *Period.* From the appearance of prodromal symptoms, throughout the illness and relapses, during convalescence, and until repeated bacteriological examination of discharges show absence of the infecting organism.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.* Healthy carriers may be numerous in an outbreak.

(2) *Isolation.* In fly-proof room, preferably under hospital conditions, of such cases as cannot command adequate sanitary environment and nursing care in their homes.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Concurrent disinfection.* Disinfection of all bowel and urinary discharges and articles soiled with them.

(6) *Terminal disinfection.* Cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Protection and purification of public water supplies.

(2) Pasteurization of public milk supplies.

(3) Supervision of other food supplies and of food handlers.

(4) Prevention of fly breeding.

(5) Sanitary disposal of human excreta.

(6) Supervision of paratyphoid carriers and their exclusion from the handling of foods.

(7) Systematic examination of fecal specimens from those who have been in contact with recognized cases to detect carriers.

(8) Exclusion of suspected milk supplies pending discovery of the personal or other cause of contamination of the milk.

(9) Exclusion of water supply, if contaminated, until adequately treated with hypochlorite or other efficient disinfectant, or unless all water used for toilet, cooking, and drinking is boiled before use.

### PEDICULOSIS

### (Lousiness)

I. ETIOLOGICAL AGENTS. Head louse (*Pediculus capitis*), body louse (*Pediculus vestimenti*), and crab louse (*Pediculus pubis*).

I a. DIAGNOSTIC CRITERIA. Finding of lice or nits (eggs) in hair, on body, or in clothing.

II. SOURCE OF INFECTION. Hairy part of body (usually). Body lice live in clothing.

III. MODE OF TRANSMISSION. Direct contact with infected person or indirectly through clothing, hats, caps, and so forth.

IV. PERIOD OF INCUBATION Lice hatch in a week and reach sexual maturity in two weeks.

V. COMMUNICABILITY.

(1) *Period.* While live lice remain to lay eggs.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

(2) *Isolation.* Exclusion of patient from school while live lice remain on body or clothing.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Prophylaxis.* Washing scalp, body and clothes; hot iron for clothes.

(6) *Concurrent disinfection.* Of underwear for body lice; of hats, caps, brushes, and combs for head lice.

(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Direct inspection of children where brought into contact in groups, such as in schools.

(2) Treatment and cure of all infected persons in the home. Pediculosis can be cleared up in forty-eight hours. The function of the nurse is important for follow-up work in the house. The lice and nits may be removed by combing (fine comb) and vinegar, and destroyed by tincture of larkspur (or by wearing a larkspur cap). Infested school children may attend school providing delousing has been carried out and nits removed, or if only a few nits remain without live pediculi, if child is under supervision and intensive treatment. The nurse can inform parents it is no disgrace to get pediculi but it is a disgrace to keep them. Bobbed hair is an aid in controlling pediculi.

## PLAGUE

I. ETIOLOGICAL AGENT. Plague bacillus, *Pasteurella pestis.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms to be confirmed by (2) bacteriological examination.

II. SOURCE OF INFECTION. Bubonic from infected rodents; pneumonic from persons ill with plague pneumonia.

III. MODE OF TRANSMISSION. Bubonic by fleas; pneumonic by contact with respiratory discharges of the sick.

IV. PERIOD OF INCUBATION. Three to seven days (rarely fourteen) in bubonic form; one to three days in pneumonic form.

V. COMMUNICABILITY.

(1) *Period and degree of.* During course of disease in pneumonic form; bubonic patient

not a menace. Degree of communicability of pneumonic, high; bubonic, low.

(2) *Immunity.* Natural, low; acquired, uncertain.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
There are no human carriers.

(2) *Isolation.* Of patient in hospital if practicable; if not, in a screened room which is free from vermin. In plague pneumonia, personal prophylaxis to avoid droplet infection must be carried out by persons who come in contact with the sick. Masks of closely woven cloth with mica or celluloid windows should be worn over the head and to the shoulders. A long gown and rubber gloves drawn over the sleeves of the gown should be provided. These articles should not be removed from the sick-room until disinfected.

(3) *Quarantine.* Contacts for seven days.

(4) *Specific therapy.* Serum may be of value in bubonic plague.

(5) *Prophylaxis.*
  (a) Active: Vaccine is used but its value is doubtful.
  (b) Passive: None practicable.

(6) *Concurrent disinfection.* All discharges and articles freshly soiled therewith.

(7) *Terminal disinfection.* Thorough cleaning followed by thorough disinfection. Fumigation to destroy vermin.

ADDITIONAL SPECIAL MEASURES.

(1) Extermination of rats and vermin by use of known methods for their destruction and exclusion; destruction of rats on ships arriving from infected ports; examination of rats, ground squirrels, etc., in areas where the infection persists, for evidence of endemic

or epidemic prevalence of the disease among them.

(2) Supervision of autopsies of all deaths during epidemics.

(3) Supervision of the disposal of the dead during epidemics, whether by burial, transfer, or holding in vault, whatever the cause of death.

## PNEUMONIA

### (Lobar)

I. ETIOLOGICAL AGENT. Various pathogenic bacteria commonly found in the nose, throat, and mouth, chiefly the pneumococcus, occasionally the bacillus of Friedlander, the influenza bacillus, etc.

I a. DIAGNOSTIC CRITERIA. Clinical symptoms. Specific infecting organisms may be determined by serological and bacteriological tests early in the course of the disease.

II. SOURCE OF INFECTION. Discharges from the mouth and nose of healthy carriers, as well as of infected individuals, and sometimes articles freshly soiled with such discharges.

III. MODE OF TRANSMISSION. By direct contact with an infected person, or with articles freshly soiled with the discharges from the nose or throat of (and possibly from infected dust of rooms occupied by) infected persons.

IV. PERIOD OF INCUBATION. Thought to be short, usually two to three days.

V. COMMUNICABILITY.

(1) *Period.* Unknown; presumably until the mouth and nasal discharges no longer carry the infectious agent in an abundant amount or in a virulent form.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers are numerous.

The early reporting of pneumonia is highly desirable.

(2) *Isolation.* Of patient during clinical course of the disease.

(3) *Quarantine.* None.

(4) *Specific therapy.* None; still on trial.

(5) *Prophylaxis.* Specific still experimental.

(6) *Concurrent disinfection.* Discharges from the nose and throat of the patient.

(7) *Terminal disinfection.* Thorough cleaning, airing, and sunning.

ADDITIONAL SPECIAL MEASURES.

In institutions and camps, when practicable, people in large numbers should not be congregated closely within doors. The general resistance should be conserved by good feeding, fresh air, temperance in the use of alcoholic beverages, the avoidance of chilling, and other hygienic precautions.

## Poliomyelitis
### (Infantile Paralysis)

I. ETIOLOGICAL AGENT. A filterable virus of undetermined morphology.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Symptoms of a mild gastro-intestinal upset (headache, moderate fever, and vomiting) associated with stiffness of neck and spine, and a coarse tremor. The mind is usually clear, though the patient may seem drowsy and irritable. Duration of this stage is about three days. In many cases paralysis or muscle weakness develops after this.

(2) *Laboratory.* The spinal fluid is characteristically under moderate pressure, the cells and globulin increased, with normal sugar content.

II. SOURCE OF INFECTION. Human carriers and patients.

III. MODE OF TRANSMISSION. By direct contact with infected persons, including carriers of the virus, or indirectly by contact with articles freshly soiled with nose, throat, or bowel discharges of such persons. There is substantial evidence of spread by milk but this mode of spread is an unusual one.

IV. PERIOD OF INCUBATION. Usually seven to fourteen days.

V. COMMUNICABILITY.

(1) *Period and degree of.* The data are incomplete but suggest a period including the incubation period and probably the first week of the disease. The incidence of the disease amongst those associated with the sick is low. This is doubtless due to the fact that only a very small proportion of persons exposed to the virus contract the disease.

(2) *Immunity.* Natural: Natural immunity in infants is derived from placental transmission from immune mothers. This disappears in most instances within a year. Acquired immunity: In the age group one to five years, immunity is relatively infrequent, but with increase in age, immunity is found with increasing frequency until adult life when the majority of individuals in urban populations are immune. In rural populations the same process of immunization takes place but at a considerably slower rate.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Sporadic cases may occur at any time, but the majority of cases occur in epidemics of varying severity, not often more than two cases per thousand population occurring in an epidemic.

(2) *Age and sex distribution.* The disease is principally a disease of childhood, although

older persons are attacked. Males and females are almost equally susceptible.

(3) *Racial distribution.* There are no clearly established racial factors in the epidemiology of the disease.

(4) *Geographical distribution.* Poliomyelitis has a clearly defined geographic distribution. It is best known in the cooler temperate zone. In warmer climates the disease diminishes, reaching its lowest incidence (but not disappearing entirely) in the tropics.

(5) *Seasonal distribution.* The highest incidence is in late summer and fall.

(6) *Cyclical distribution.* In general, epidemic years in any one area tend to be spaced by a variable number of lighter years, but no definite cyclic recurrence of the disease has been established.

(7) *Mortality.* This is very variable; the highest mortality rate in the 1916 epidemic was in the Borough of Queens, N. Y.—84.5 per 100,000. For the registration area of that year it was 10 per 100,000. The average mortality rate for the registration area of the United States fom 1912 to 1923 inclusive was approximately 2 per 100,000.

(8) *Case fatality.* Varies in different years, in different epidemics, and with different localities. In 1916 in New York, it was 25 per cent; in Massachusetts in 1927, it was 14.9 per cent. The average for thirty-eight epidemics studied was 20.8 per cent.

## VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: Although healthy carriers are doubtless of far greater importance numerically than cases as spreaders of the virus, there is as yet no practical method for detecting them; hence, no method of handling carriers can be developed further than quarantine of contacts as presumptive carriers.

Reporting: Reporting of cases and suspected cases should always be required, especially that proper care may be provided.

(2) *Isolation.* Of all paralytic cases for three weeks from febrile onset.

(3) *Quarantine.* Of exposed children of the household and of adults of the household in so far as their vocation brings them into contact with children or makes them food handlers, for twenty-one days from the last exposure. No placarding.

(4) *Specific therapy.* Convalescent serum seems the rational form of treatment in the preparalytic stage of the disease and is usually administered intraspinally or intravenously, or by both routes.

(5) *Prophylaxis.* Active, none; passive is still experimental.

(6) *Concurrent disinfection.* Nose, throat, and bowel discharges and articles soiled therewith.

(7) *Terminal disinfection.* Cleaning.

ADDITIONAL SPECIAL MEASURES IN OUTBREAKS.

(1) Search for and examination of all sick children.

(2) All children with fever should be isolated pending diagnosis.

(3) Education in such technique of bedside nursing as will prevent the distribution of infectious discharges to others from cases isolated at home.

(4) Protection of children from contact in general in times of epidemics.

(5) Facilities for early diagnosis and treatment

(serum) through some central agency for collection of serum, administered under studied condition for drawing conclusions.

(6) Facilities for after-care. Proper orthopedic treatment should be provided. The essentials are preservation of remaining muscle strength, prevention of contractures and deformities, and corrective treatment.

## PSITTACOSIS

I. ETIOLOGICAL AGENT. A filterable agent.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Onset, chilly sensations, fever, headache, with early pneumonic involvement; cough absent or usually non-productive if present. Tongue, white coat; anorexia extreme; constipation the rule; pulse usually slow in relation to temperature. Delirium common; albuminuria almost constant; relapses not uncommon.

(2) *Laboratory.* White blood count normal or slightly increased early, with leucopenia later. The disease may be transmitted to healthy susceptible birds or mice by inoculating blood drawn preferably during first week of illness; rabbits and guinea pigs susceptible to intracerebral inoculation.

II. SOURCE OF INFECTION. Newly acquired ill parrots, parrakeets, love-birds, canaries. Apparently well birds occasionally transmit the infection.

III. MODE OF TRANSMISSION. Contact with infected birds or their recent surroundings; unusually through a human case.

IV. PERIOD OF INCUBATION. Six to fifteen days.

V. COMMUNICABILITY. Ill birds and their surroundings highly infectious for man; patients much less dangerous.

V a. STATISTICAL EPIDEMIOLOGY. Usually in sudden house outbreaks among persons exposed to ill tropical birds. All ages susceptible, but more severe in higher age groups. Deaths mainly confined to persons over thirty years of age. Females more frequently attacked than males. Case fatality 20 to 50 per cent, or even higher.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
Carriers: Apparently healthy birds occasionally convey the disease; human carriers unknown.

(2) *Isolation.* Of doubtful value, owing to low infectivity from patient to man.

(3) *Quarantine.* Buildings which housed birds should be quarantined until thoroughly cleansed and disinfected.

(4) *Specific therapy.* Intravenous or intramuscular administration of convalescent serum, 50 to 100 cc.'s daily is worthy of trial.

(5) *Specific prophylaxis.* None.

(6) *Concurrent disinfection.* Of all discharges.

(7) *Terminal disinfection.* Incriminated birds should be sacrificed and their bodies and cages burned.

ADDITIONAL SPECIAL MEASURES.

(1) Prohibition of traffic in South American parrots.

(2) Quarantine of homes and pet shops known to have harbored infected birds until thoroughly cleansed.

(3) Education of community.

## Puerperal Infection

I. ETIOLOGICAL AGENT. Streptococcus, Gonococcus, all other bacteria which may cause wound infection.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Fever in puerperium which is not

readily accounted for by some definite existing disease.

(2) *Laboratory.* Culture of causative bacteria from uterine lochia or blood.

II. SOURCE OF INFECTION. Any infectious focus on patient or attendants, from which infectious material may be transferred by hands of physician, nurse, or patient, instruments, dressings, bathwater, suture material, discharge from nose or throat of doctor, nurse, or attendant, especially hands of physician or nurse or infectious foci in patient's birth canal. Susceptibility to infection is increased by hemorrhage, toxemia, or exhaustion, badly damaged birth canal, early rupture of membranes, retention of portions of placenta or membranes, or blood clots.

III. MODE OF TRANSMISSION. Infection of the genital tract at any time during or following labor.

IV. PERIOD OF INCUBATION. One to five days; more frequently within three days.

V. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*
(2) *Isolation.* Strict isolation of infected patient and her nurse.
(3) *Specific therapy.* None.
(4) *Prophylaxis.*
  (a) Absolute asepsis during labor. Conserve membranes until as late in labor as possible.
  (b) Rectal examination and abdominal palpation in place of vaginal examinations.
  (c) Avoidance of tub bathing and intercourse late in pregnancy.
  (d) Removal of foci of infection on the vulva or in vagina of patient.
  (e) In cases of an infection by the gonococcus, treatment previous to labor, special precaution at time of labor

in the matter of injury to the birth canal, and care of the child (special postnatal attention to the eyes of the child in such cases).

(f) Education and control of midwives.

(5) *Concurrent disinfection.* Of all possible infective discharges.

(6) *Terminal disinfection.* None.

## RABIES

I. ETIOLOGICAL AGENT. A filterable virus.

I a. DIAGNOSTIC CRITERIA IN ANIMALS.

(1) *Clinical.* Any unexplained change in disposition of an animal followed by a period of excitability or paralysis, and death within ten days.

(2) *Laboratory.* Negri bodies in nerve cells. Animal inoculation with suspected tissue. In absence of laboratory findings diagnosis must be based upon history and clinical symptoms.

II. SOURCE OF INFECTION. Saliva of infected animals, chiefly dogs.

III. MODE OF TRANSMISSION. Inoculation with saliva of infected animals through abrasion of skin or mucous membrane, almost always by bites or scratches. The virus may penetrate through microscopic abrasions of apparently normal skin licked by a rabid animal, but this is unusual.

IV. PERIOD OF INCUBATION. Usually somewhat less than six weeks. May vary from two weeks to six months or more, depending upon the amount and virulence of the virus and the nature and site of the lesion in relation to nerve supply.

V. COMMUNICABILITY. Communicable from five days before onset of symptoms to death of animal.

(1) *Period and degree of.* Varies with the origin, nature, virulence and amount of virus, site and character of the wound, and susceptibility of the victim.

(2) *Immunity.* Natural immunity unknown; antirabic treatment induces acquired immunity.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Rare in man. Prevalent in dogs.

(2) *Age and sex distribution.* Not significant. Over 60 per cent of deaths are under twenty years and almost three times as many males as females.

(3) *Racial distribution.* Differences probably due to greater chance of infection.

(4) *Geographical distribution.* World-wide except in a very few island countries, Australia, New Zealand, and so forth.

(5) *Seasonal distribution.* Not significant.

(6) *Cyclical distribution.* About five years more or less.

(7) *Mortality rate.* Average, .075 per 100,000 population in United States registration area, 1915 to 1927, inclusive. Usually due to lack of or delayed antirabic treatment; occasionally in spite of treatment.

(8) *Case fatality.* 100 per cent in developed cases.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*
Carriers: None.

(2) *Isolation.* Isolation of patient without quarantine or placard.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Prophylaxis.*

(a) Active: Immunization by antirabic treatment after exposure, before development of symptoms.

(b) Passive: None.
(c) Prompt treatment of suspected bites by fuming nitric acid.

(6) *Concurrent disinfection.* Concurrent disinfection of saliva of patient and articles soiled therewith.

(7) *Terminal disinfection.* Thorough cleaning.

ADDITIONAL SPECIAL MEASURES.

Animals, particularly dogs, constitute the reservoir of infection.

Preventive measures relate to animals and exposed persons.

*A. Animals.*

(1) Require license for dogs.
(2) Destroy all unlicensed dogs.
(3) Investigate all cases or suspected cases of rabies among animals.
(4) Quarantine all dogs in areas where known rabid animals have run at large.
(5) Provide laboratory facilities for examination of tissue specimens.

*B. Exposed persons.*

(1) Provide antirabic treatment at public expense for exposed persons.

## RINGWORM AND FAVUS

The diseases commonly spoken of as ringworm are infections of the skin, hair, or nails, with one of a closely related group of fungus parasites. The parasites are a primitive form of vegetable organism and resemble the familiar molds which occur on damp clothing, cheese, bread, etc. There are many species in this group. Some only invade the skin, others invade the hair or the nails as well. Some have a predilection for the scalp; others for the folds of skin or areas like the palms of the hands or the soles of the feet which are kept moist by sweat. Some are known to attack only human beings; others attack cats, dogs, horses, and pet birds, and these infected animals are frequently a source of contagion for types attacking the scalp. The different parasites vary somewhat in virulence also. Some cause mild scaling patches, others deep inflamed areas with the formation of pus. They occasionally invade the lymph nodes gaining access to the blood stream and in this way produce more or less transient eruptions in areas of the body distant from the original disease. The more important types of this infection are: ringworm of the scalp, favus of the scalp, ringworm of the body and ringworm of the feet and groin.

### A. Ringworm of Body and of Feet and Groin

I. ETIOLOGICAL AGENT. *Trichophyton* or *epidermophyton.*

I a. DIAGNOSTIC CRITERIA.
  (1) *Clinical.* Inspection.
  (2) *Laboratory.* Microscopical examination.

II. SOURCE OF INFECTION. Infected persons or articles recently contaminated by them.

III. MODE OF TRANSMISSION. (1) Indirect contact—for feet: Floors of swimming pools, and gymnasiums, exchange of shoes. (2) Direct contact.

IV. PERIOD OF INCUBATION. Undetermined.

V. COMMUNICABILITY.
  (1) *Period and degree of.* Communicable throughout infection; high degree of communicability.
  (2) *Immunity.* None.

V a. STATISTICAL EPIDEMIOLOGY.
  (1) *Prevalence.* The foot form of ringworm is quite prevalent among adults but only rarely occurs in children. (See "carriers," page 170.)
  (2) *Age and sex distribution.* Most foot cases are in male adolescents. Most body or face cases are among young children.

(3) *Seasonal distribution.* The peak is in warm weather.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: About 50 per cent of the population are, according to estimates, carriers of the fungi causing ringworm of the feet or groin. It is difficult to distinguish carriers from mild clinical cases.

(2) Rigid exclusion of marked cases from gymnasiums and swimming pools, but not from school.

(3) Adequate and persistent treatment. Ringworm of the body or face is an easily treated eruption. Its chief danger lies in the possibility of the scalp becoming infected.

(4) This disease may be prevented by wearing proper shoes or slippers in gymnasiums; treatment of lesions with iodine and collodion usually clears up the condition.

## RINGWORM OF SCALP AND FAVUS

(The methods of diagnosis and treatment are the same for Ringworm of Scalp and for Favus)

I. ETIOLOGICAL AGENT. *Microsporon, Trichophyton, Achorion schoenleinii* (Favus).

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Direct inspection.

(2) *Laboratory.* Microscopical examination. Examination of infected hairs in a dark room under ultra-violet light passed through a wood filter causes the hairs to glow and makes diagnosis easy. This may be used where there are epidemics in institutions as the apparatus is expensive to use for individual cases.

II. SOURCE OF INFECTION. Infected persons, animals, or articles recently contaminated by them.

III. MODE OF TRANSMISSION. Direct contact, or indirectly by caps, pillows, etc.; also contact with animal hosts, chiefly cats.

IV. PERIOD OF INCUBATION. Unknown.

V. COMMUNICABILITY.

(1) *Period and degree of.* Throughout infection and until healthy hair begins to grow. Degree, high.

(2) *Immunity.* Persons over fifteen years are practically immune to ringworm of the scalp but never to favus.

V a. STATISTICAL EPIDEMIOLOGY. Ringworm is common in the United States but favus is rare, particularly in children. Most cases of favus are imported from east and south Europe.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

(2) *Isolation.* Absolute exclusion from school. Confinement to the house is impractical.

(3) *Specific therapy.* X-ray or the giving of thallium acetate by mouth (unsafe in children under twelve years) are the only reliable remedies. Cure is often difficult.

(4) Adequate treatment of cases, and constant cleanliness of the scalp are the best preventive measures.

## ROCKY MOUNTAIN SPOTTED FEVER

I. ETIOLOGICAL AGENT. Gram-negative, intracellular, non-cultivable and non-filterable organisms (*Dermacentroxenus rickettsi Wolbach*). Behavior in animal and anthropoid host indicates a distinct life cycle.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* History of tick bite; characteristic rash.

(2) *Laboratory.* Animal inoculation; positive Wiel-Felix test.

II. SOURCE OF INFECTION. Wild rodents, which serve largely as healthy carriers.

III. MODE OF TRANSMISSION. Bite of tick *Dermacentor andersoni,* mashing infected ticks on hands or other body surfaces.

IV. PERIOD OF INCUBATION. Three to ten days.

V. COMMUNICABILITY. Not communicable from man.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Geographical distribution.* Limited to Rocky Mountain area.
(2) *Seasonal distribution.* Spring and early summer, corresponding to appearance of adult ticks.
(3) *Mortality.* Varies with locality.
(4) *Case fatality.* Varies with locality, 90 per cent in some areas; as low as 5 per cent in others.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
(2) *Isolation.* None.
(3) *Quarantine.* None.
(4) *Specific therapy.* None.
(5) *Prophylaxis.*
  (a) Active: Use of Spencer-Parker vaccine has given very encouraging results.
  (b) Passive: None.
(6) *Concurrent disinfection.* All ticks on the patient should be destroyed.
(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Personal prophylaxis of persons entering the infected zones during the season of ticks by wearing tick-proof clothing, and careful daily search of the body for ticks which may have attached themselves.
(2) The destruction of ticks by clearing and burning vegetation on the lands in infected zones.

(3) The destruction of ticks on domestic animals by dipping.
(4) The destruction of small mammalian hosts, as ground squirrels, chipmunks, and so forth.

## SCABIES
## (Itch)

I. ETIOLOGICAL AGENT. *Acarus scabiei* (itch mite).

I a. DIAGNOSTIC CRITERIA.
(1) *Clinical.* Recognition of interdigital burrows.
(2) *Laboratory.* Finding the mite microscopically.

II. SOURCE OF INFECTION. Lesions of skin of infested individual.

III. MODE OF TRANSMISSION. Direct contact with infested individual, or by sleeping in a bed occupied by infested individual without change of bed linen; can also be acquired from underwear, gloves, and so forth, carrying the itch mite.

IV. PERIOD OF INCUBATION. Throughout infestation.

V. COMMUNICABILITY.
(1) *Period.* As long as live acari remain.

VI. ADMINISTRATIVE MEASURES.
(1) *Investigation of source of infection.*
(2) *Isolation.* None.
(3) *Quarantine.* None.
(4) *Specific therapy.* None.
(5) *Immunization.* None.
(6) *Concurrent disinfection.* Bed sheets and covers, underwear, gloves, and so forth.
(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.
(1) Personal cleanliness, effective protective devices, and proper medical treatment.
(2) All members of family must be freed from in-

festation. Nurses are of special assistance in carrying the control measures to the family and seeing that they are carried out for the school child and other members of family who may be infested.

(3) Exclusion from school until under proper treatment.

## Scarlet Fever

I. ETIOLOGICAL AGENT. Hemolytic streptococcus.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Sudden onset with nausea, vomiting, fever, sore throat and rash (bright red spots on subcuticular flush) on second or third day. Cases occur without eruption when provisional diagnosis may be made on sore throat, fever, vomiting and history of exposure. The Schultz-Charlton blanching phenomenon may be used when rash has appeared; 1/10 to 1/2 cc. convalescent serum or scarlet fever antitoxin is injected into skin where rash exists which causes local blanching, in 6–36 hours, if rash is scarlatinal; absence of blanching, however, does not rule out scarlet fever.

(2) *Laboratory.* Bacteriological diagnosis is generally impractical.

II. SOURCE OF INFECTION. Discharges from the nose, throat, ears, abscesses, or wound surfaces of sick or convalescent patients and articles freshly soiled therewith. The nose and throat discharges of carriers may also spread the disease.

III. MODE OF TRANSMISSION. Directly by personal contact with an infected person; indirectly by articles freshly soiled with discharges of an infected person or through contaminated milk or milk products. Infection does not occur from skin desquamation.

IV. PERIOD OF INCUBATION. Usually three or four days.

Rarely within twenty-four hours and seldom over one week.

V. COMMUNICABILITY.

(1) *Period and degree of.* Three weeks from the onset of the disease, without regard to the stage or extent of desquamation, and until all abnormal discharges have ceased and all open sores or wounds have healed. Communicable, but not to the degree of measles or smallpox.

(2) *Immunity.* Unnoticed infections may occur and produce immunity. Lasting immunity is usual after attack, but second attacks do occur.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* In all parts of the world. Not important in tropics; somewhat more prevalent in urban than in rural districts.

(2) *Age and sex distribution.* In urban areas about 85 per cent under ten years, 60 per cent under five years, but rare under one year; average age higher in rural areas; sex susceptibility about equal.

(3) *Racial distribution.* All races susceptible but much less severe among colored children.

(4) *Geographical distribution.* Whole of United States, but less frequently observed in the South.

(5) *Seasonal distribution.* At all seasons, but most cases in winter and spring.

(6) *Mortality.* Varies greatly in different countries and at different times; in the registration area of the United States in 1926 and 1927 the rates were 2.5 and 2.3 per 100,000 population respectively.

(7) *Case fatality.* In some epidemics the fatality rate has been very high. In the United States the average is about 2 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*
  Carriers: Existence undetermined, although probably exist.

(2) *Isolation.* In home or hospital, maintained in each case until the end of the period of infectivity. If medical inspection is not available, isolation for period of communicability.

(3) *Quarantine.* Exclusion of exposed children and teachers from school, and food handlers from their work, until seven days have elapsed since last exposure to a recognized case. Placarding helps to control when associated with other measures.

(4) *Specific therapy.* The use of potent scarlet fever antitoxin is of value in shortening the course of the disease. The antitoxin should be administered within three days of the onset of disease. Specific therapy, however, is still controversial. Convalescent serum is used effectively in severe septic cases.

(5) *Immunization.*
  (a) Active: Active immunity may be produced by a suitable streptococcus antigen, but its practical value is at present undetermined.
  (b) Passive: Passive immunization not at present generally advisable with any but human convalescent serum.

(6) *Concurrent disinfection.* Of all articles which have been in contact with a patient and all articles soiled with discharges of the patient.

(7) *Terminal disinfection.* Thorough cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Placard homes or hospitalize the case; isolate in hospital where case cannot be properly isolated at home; hospitalization often ad-

visable, where many children in the home; hospitalization may be a convenience to the family; hospitalization is unnecessary where proper isolation can be provided at home, and there is cooperation with the medical attendant and the health authorities.

(2) Susceptibles as determined by the Dick test may be actively immunized by scarlet fever toxin.

(3) Exclusion of exposed children and teachers from school, and food handlers from their work, until seven days have elapsed since last exposure to a recognized case. Encourage removal of young susceptible contacts to home of adult friends.

(4) Daily examination of exposed children and of other possibly exposed persons for a week after last exposure.

(5) Schools should not be closed where daily observation of the children by a physician or nurse can be provided.

(6) In school and institutional outbreaks immunization of all exposed children with scarlet fever toxin may be advisable.

(7) Education as to special danger of exposing young children to those exhibiting acute catarrhal symptoms of any kind.

(8) Pasteurization of all milk and milk products.

## SMALLPOX

I. ETIOLOGICAL AGENT. A virus present in the lesions on skin and mucous membranes, probably filterable with difficulty, and giving rise to inclusion bodies in the cytoplasm and in the nuclei of tissue cells.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* The distribution of the eruption, usually general and symmetrical, favoring prominences, extensor surfaces, and surfaces exposed to irritation, while tending to avoid

protected surfaces, flexures, and depressions; most abundant and earliest on face, next forearms and wrist, favoring the limbs, especially distally, more than the trunk; more abundant on shoulders and chest than on loins and abdomen. The individual lesions are deep-seated and have an infiltrated base except when modified naturally or by previous vaccination; they are circular if not so thickly placed as to be fused.

The course of the disease is characteristic, with one to five days of febrile symptoms before the eruption, which is papular for one to four days, vesicular for one to four days, and pustular for two to six days; then crusts form which fall off ten to forty days after the first sign of the lesion, leaving a red scar which fades gradually.

Any case of purpura or hemorrhage with fever should be considered as smallpox of the most fatal sort until another diagnosis is clear.

(2) *Laboratory.* Not generally advisable.

II. SOURCE OF INFECTION. Lesions of the mucous membranes (mouth, nose, and throat) and skin of infected persons.

III. MODE OF TRANSMISSION. By contact with persons sick with the disease; this contact need not be very intimate, but aerial transmission through more than a few feet is unlikely. The infection may be passively carried by inanimate and by animate objects (persons, insects) which have been contaminated from persons having smallpox, but such passive infectivity is of brief duration.

IV. PERIOD OF INCUBATION. Seven to twenty-one days, tending to be longer with the milder strains; commonly about fourteen days from effective exposure to the beginning of the eruption. Observation for sixteen days after exposure is usually adequate to detect all cases among contacts if temperatures are taken daily.

V. COMMUNICABILITY.

(1) *Period and degree of.* Specially communicable in the early eruptive stage, when lesions are present in the mouth, nose and throat, but patients should be isolated from the first evidence of fever until the skin, including the soles of the feet, is free from the primary crusts of the eruption. One of the most readily communicable diseases known. Exposure without contracting the disease occurs but is no definite evidence of immunity.

(2) *Immunity.* Natural: Absolute natural immunity to smallpox in all probability does not exist, but certain individuals are more severely affected than others following exposure to the same source of infection. Acquired: Immunity conferred by an attack usually persists throughout life, but second attacks occasionally occur. Immunity acquired by vaccination is usually complete for from five to twenty years, but some individuals lose their immunity in less time, so that in case of definite exposure to severe smallpox, vaccination with fully potent virus should be performed at once, unless this has been done within a year. The reaction of immunity, after vaccination with fully potent vaccine is complete evidence of immunity.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Great variation depending on exposure of the community and its immune status. From 30,000 to 100,000 cases occur annually in the United States.

(2) *Age and sex distribution.* Varies with exposure and immune status. In a partially protected community it is usually most prevalent in young adult males. In unvaccinated communities with constant or recurring exposures it is a children's disease.

(3) *Racial distribution.* No definite racial immunity or susceptibility.

(4) *Geographical distribution.* Occurs in all climates.

(5) *Seasonal distribution.* Definite seasonal variation with low point August 31st for the United States. The peak of highest incidence is more variable but usually occurs between December and June.

(6) *Cyclical distribution.* Very great variation of incidence in any community by years but without definite cycles.

(7) *Mortality.* Varies more with the strain of the disease present than with the total incidence. It may be more severe than the worst diphtheria epidemic, but for the United States as a whole it is usually between .1 and 1 per 100,000 a year.

(8) *Case fatality.* This is more variable than for any other infectious disease, from .01 per cent to 40 per cent. The more severe outbreaks usually have a fatality of about 30 per cent while the form most frequent in the United States has a fatality of about .1 per cent. The hemorrhagic type may have 100 per cent fatality.

## VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: Active carriers of the disease, without symptoms, are unknown, but persons may be passive carriers in the same sense as other infected objects, the infection persisting for only a brief time; and vaccinated persons may develop clinically unrecognizable forms of the disease and serve as sources of infection.

Reporting: Strict and prompt reporting of cases should be enforced, and professional visits made so that vaccination of persons who have been exposed can be completed within twenty-four hours. Those exposed and unvaccinated should be quarantined. The vaccinated should be observed daily until the vaccination reaction has begun to subside, if vaccination was performed within twenty-four hours of first exposure, otherwise for sixteen days from last exposure.

(2) *Isolation.* Of great value and should be strictly enforced. Home isolation is not usually as effective as isolation in a contagious disease hospital. Special strictness must be observed for all cases of severe smallpox. Recent vaccination with fully potent virus should be insisted on for all persons who may be even remotely exposed, and the possibility of vaccinated persons transporting the infection passively on skin, mucosa, or clothing is to be borne in mind.

(3) *Quarintine.* As above.

(4) *Specific therapy.* None.

(5) *Immunization.*

(a) Active:

Vaccination is essential for the control of the disease. (See under V(2), Immunity, acquired.) Vaccination should be performed some time previous to exposure to insure protection but if performed on the day of exposure it will almost always protect.

In order to avoid sore arms and other possible complications of vaccination, it is very important that the vaccine insertion should be as small and superficial as practicable, not over one-eighth inch in any direction, and that the site should be kept dry. The pressure method as recommended by the United States Public Health Service is preferred; not over ten pressures with the side of the needle point for primary vaccinations, and thirty for re-vaccinations. Primary vaccination between the ages of two and three months is particularly desirable. The time of vaccination should be adjusted to avoid skin lesions elsewhere on the body, in infants to avoid teething, and in older children to avoid warmer months. Particular care should be used in primary vaccinations beyond the age of infancy.

(b) Passive: None.

(6) *Concurrent disinfection.* Of all discharges. No article to leave the surroundings of the patient without boiling or equally effective disinfection.

(7) *Terminal disinfection.* Thorough cleaning and disinfection of premises.

ADDITIONAL SPECIAL MEASURES.

(1) Patients should be removed to isolation hospitals or the entire premises should be under strict quarantine. The strictest attention to aseptic nursing should be used in caring for smallpox patients, and the room and articles possibly contaminated should be thoroughly disinfected on removal, recovery, or death.

(2) Vaccination of infants, preferably by the obstetrician during the first postnatal days, should be encouraged. Vaccination of children should be required before they enter school. Vaccination of employees of establishments exposed to promiscuous public contact and travel should be advocated.

(3) The smallpox vaccine which is to be used in combating an epidemic, or in testing immunity by means of the immune reaction, should be obtained direct from the manufacturing laboratory and be kept at or below freezing.

(4) The more severe the strain of smallpox, the more strictly should preventive recommendations be carried out. In the presence of the severe type full and prompt publicity of the facts and of the proper vaccination procedures should be given to encourage *general vaccination of the public.*

## STREPTOCOCCUS THROAT INFECTIONS

(Septic sore throat, and so forth)

I. ETIOLOGICAL AGENTS. *Streptococcus hemolyticus,* human types, especially those similar to streptococci occurring in scarlet fever and septic tonsillitis.

For administrative purposes streptococcus throat infections may be divided into three groups on the basis of etiology:

(1) Epidemic sore throat, which usually occurs in explosive outbreaks and is spread chiefly by milk.

(2) Scarlatinal sore throat which bacteriologically and epidemiologically has been shown to be due to streptococci of scarlet fever but in which no rash develops.

(3) Endemic sore throat, tonsillitis, etc., which

occurs sporadically and is apparently due to various types of hemolytic streptococci.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Inflammation and swelling of tonsils and glands of neck, with fever, prostration and symptoms of a virulent infection.

(2) *Laboratory.* Smears and cultures from throat showing causative organism; repeated bacteriological examinations of samples of suspected milk should be made. The obtaining of the necessary proof is often impossible.

II. SOURCE OF INFECTION. The human nasopharynx, any case of acute streptococcus inflammation of the throat being a potential source of infection, including the period of convalescence of such cases. The udder of a cow infected by the milker is a common source of infection. In such udders the physical signs of mastitis may be absent.*

III. MODE OF TRANSMISSION. Direct or indirect human contact; consumption of milk, usually raw, contaminated by case or carrier or from an infected individual.

IV. PERIOD OF INCUBATION. One to three days.

V. COMMUNICABILITY.

(1) *Period.* In man from the onset of infection and during the continuance of clinical symptoms and so long as the specific streptococci persist in the throat. A carrier condition may follow clinical recovery. In the cow, so long as the specific streptococci are discharged in the milk. Any cow discovered to be infected should be excluded from the milking herd.

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* Mastitis in the cow, due to bovine types of streptococci, is not a cause, so far as known, of septic sore throat in humans unless a secondary infection of the udder by a human type of streptococcus takes place.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Usually occurs in epidemics and may occur in any part of the country.

(2) *Age and sex distribution.* The groups using raw milk; most cases among adolescents.

(3) *Racial and geographical distribution.* No differentiation.

(4) *Seasonal distribution.* Most epidemics have occurred in the spring or early summer, though they might occur at any time.

(5) *Cyclical distribution.* None.

(6) *Mortality and fatality.* The mortality as a whole is not high, but when epidemics occur the fatality rate is usually fairly high, averaging from 2 to 5 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: Particularly convalescent carriers, are important agents in spreading the disease and all known or suspected carriers should be under observation and be excluded from the handling of milk.

(2) *Isolation.* Modified isolation of the patient during the clinical course of the disease and while he remains a carrier, particularly exclusion from the handling of milk.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Specific prophylaxis.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Pasteurization of all milk supplies.

(2) In the presence of an epidemic, exclusion of the suspected milk supply from use or public sale until pasteurized or until beyond suspicion. Where well-equipped laboratory facilities are available, by repeated individual bacteriological examinations it may be

possible to detect the infected animal. It may be necessary to have separate samples taken from each quarter of the udder of suspected animals.

(3) Search for and exclusion of human cases or carriers from the handling of milk or milk products.

(4) Education in personal hygiene and avoidance of the use of common towels, and drinking and eating utensils.

## SYPHILIS

I. ETIOLOGICAL AGENT. *Treponema pallidum.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms confirmed by (2) microscopical examination of discharges and by serum reactions.

II. SOURCE OF INFECTION. Discharges from the lesions of the skin and mucous membranes, and the blood of infected persons, and articles freshly soiled with such discharges or blood in which the *Treponema pallidum* is present.

III. MODE OF TRANSMISSION.

(1) Sexual intercourse, chiefly.

(2) Kissing or other direct contact with moist lesions.

(3) Surgical or technical accidents.

(4) Congenitally from syphilitic mother through placenta. This is the chief source of syphilis in infancy.

IV. PERIOD OF INCUBATION. Minimum ten days, average two to four weeks, occasionally six weeks or longer.

V. COMMUNICABILITY.

(1) *Period and degree of.* As long as the lesions are open upon the skin, or mucous membranes at any stage of the disease. Grade

of communicability is high, if direct contact with moist lesions.

(2) *Immunity.* None.

V a. STATISTICAL EPIDEMIOLOGY. Of all deaths due to syphilis in the United States for the years 1926, 1927 and 1928, 24.5 per cent of them were under twenty years of age and 19.2 per cent under one year of age. These figures indicate the necessity of early treatment of infected mothers as well as infected infants. Among the communicable diseases causing deaths under twenty years for the above three years, syphilis stood eleventh in the list.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

(a) Carriers: None in the ordinary sense of the term exist, but a woman with latent syphilis may transmit the disease to the child in utero. This fact calls for the testing of every pregnant woman, and anti-syphilitic treatment if indicated. The treatment of infected mothers before the end of the fifth month of pregnancy should be encouraged.

(b) Reporting: Of cases by physician—name of patient if: (1) discontinues treatment, or is (2) exposing others to the disease.

(2) *Isolation.* Is essential for all non-cooperative patients until surface lesions are healed.

(3) *Specific therapy.* Arsphenamine and its modifications, bismuth, mercury; tryparsamide, and fever therapy in neurosyphilis.

(4) *Prophylaxis.* Use of soap and water immediately after exposure, injection of non-irritating silver preparations. Calomel ointment 33 per cent (of doubtful value six

hours after exposure). Less effective in the female.

ADDITIONAL SPECIAL MEASURES.

(1) Prompt treatment of all prenatal syphilitic cases.
(2) Follow-up of patients who discontinue treatments.
(3) Free clinics, laboratory service, and arsenicals for the indigent.
(4) Information services for physicians, patients, and the public.
(5) Repression of prostitution and associated uses of alcoholic beverages by proper authorities.
(6) Restriction of advertising and sale of remedies for self-treatment.
(7) No person affected with syphilis in the infective stage should be permitted to engage in the occupation of nurse, nursemaid, domestic servant, barber, hairdresser, chiropodist, manicurist, bath attendant, or masseur, or in any other occupation of personal service in which he or she may infect others with syphilis.
(8) Promotion of prompt and adequate personal prophylaxis.
(9) Education in matters of sex hygiene, including the broad sex principles underlying character building, self-control, health habits, and also the fact that continence is compatible with health and normal development.

## Tetanus and Other Wound Infections

### TETANUS

I. ETIOLOGICAL AGENT. Tetanus bacillus; *Clostridium tetani.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms confirmed by bacteriological examination and mouse inoculation.

II. SOURCE OF INFECTION. Animal manure, soil, and street dust.

III. MODE OF TRANSMISSION. Inoculation, or wound infection.

IV. PERIOD OF INCUBATION. Four days to three weeks, or longer, if latent bacilli deposited in the tissues are stirred to activity by subsequent chemical or mechanical irritation; commonly eight to ten days.

V. COMMUNICABILITY. Patient not infectious except in rare instances where wound discharges are infectious.

V a. STATISTICAL EPIDEMIOLOGY. The disease is worldwide and occurs chiefly as a result of wound infection; more males become infected than females and most cases occur among young children and young people and during the summer months in the United States. The disease is comparatively uncommon, but tetanus of the new-born and tetanus untreated with anti-tetanic serum are highly fatal.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*
(2) *Isolation.* None.
(3) *Quarantine.* None.
(4) *Specific therapy.* Antitoxin may help; usually it is of little therapeutic value.
(5) *Immunization.* An attack of the disease does not confer immunity. Passive immunization may be developed promptly by one, or preferably two, injections of 1,500 units of tetanus antitoxin.
(6) *Concurrent disinfection.* Destruction of all wound dressings.
(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Supervision of the practice of obstetrics.
(2) Educational propaganda such as "safety-first" campaigns, and "safe and sane Fourth of

July" campaigns. Education of the public and physicians in infected areas regarding the prevention of the disease and the local treatment of wounds.

(3) Prophylactic use of tetanus antitoxin in all powder burns, and soiled, ragged, or penetrating wounds, and in wounds of other types acquired in localities where soil is known to be heavily contaminated with *B. tetani.*

(4) Removal of all foreign matter as early as possible from all wounds.

(5) Avoidance of the use of bunion pads and shields or other dressings as coverings for vaccinations performed against smallpox.

## TRACHOMA

I. ETIOLOGICAL AGENT. Undetermined.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical symptoms.*

(2) *Laboratory.* Bacteriological examination of the conjunctival secretions and lesions may exclude other infections.

II. SOURCE OF INFECTION. Secretions and purulent discharges from the conjunctivae of infected persons.

III. MODE OF TRANSMISSION. By direct contact with infected persons and indirectly by contact with articles freshly soiled with the infective discharges of such persons.

IV. PERIOD OF INCUBATION. Undetermined.

V. COMMUNICABILITY.

(1) *Period and degree of.* Communicable while lesions are present other than cicatricial. Degree of communicability depends on intimacy of contact and freshness of virus.

(2) *Immunity.* Natural: Natural immunity is relative and limited to colored races; Acquired: Not known.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Present in some immigrants and in certain areas of the United States. The disease creates a problem among American Indians.

(2) *Age and sex distribution.* Not restricted as to age or sex, but most cases occur among children.

(3) The serious aspect of trachoma is not its mortality rate, which is nil, but the impairment to eyesight, or blindness, which may result.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*

Carriers: There are no known carriers but supposedly healed cases that are not recognizable clinically may have a recurrence and become a source of infection.

(2) *Isolation.* Exclusion of the patient from general school classes. Isolation of case is not always necessary if properly treated and instructed.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Specific prophylaxis.* None.

(a) Individual: Use of zinc sulphate 1 per cent, copper sulphate .5 per cent, novocaine 2 per cent.

(b) School: Special classes and regular treatment of cases.

(c) Home: Hygienic cleanliness in infected homes, with a mild collyrium in cases of exposure.

(6) *Concurrent disinfection.* Of discharges and articles soiled therewith.

(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Search for cases by examination of immigrants, and in trachomatous areas of school

children, inmates of orphanages, homes for the indigent, and industries where employees are in close contact (such as lumber camps, construction camps, and where individual toilet articles are not provided).

(2) Treatment of all cases made easily available and every infected person urged to take treatment.

(3) Elimination of common towels and toilet articles from public places. Washing should be generally possible in running water, without having to touch faucet or stopper.

(4) Education in the principles of personal cleanliness and the necessity of avoiding direct or indirect transference of body discharges.

(5) Provision of dispensaries and clinics where treatment may be conveniently obtained at low cost.

(6) In endemic centers routine administration of zinc or copper sulphate is a measure of prophylaxis.

## TRICHINIASIS

I. ETIOLOGICAL AGENT. *Trichinella spiralis.*

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* History of eating pork associated with clinical symptoms.

(2) *Laboratory.* Eosinophilia, isolation of parasite in stomach washings or in feces, presence of parasite in portions of unconsumed meat; as last resort, after about twenty-one days, harpooning of muscles to find parasite.

II. SOURCE OF INFECTION. Unsafeguarded (especially uncooked) pork; in rare cases meat of other mammals.

III. MODE OF TRANSMISSION. Direct from meat to man through consumption of infected meat.

IV. PERIOD OF INCUBATION. Variable from several hours to several weeks.

V. COMMUNICABILITY. Not applicable; no natural or acquired immunity known.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* World-wide, but uncommon.
(2) *Age and sex distribution.* Nothing special.
(3) *Racial distribution.* More common in peoples who eat raw or rare pork.
(4) *Geographical distribution.* World-wide.
(5) *Seasonal distribution.* None.
(6) *Cyclical distribution.* None.
(7) *Mortality.* Almost negligible in the United States.
(8) *Case fatality.* Lower in children than in adults, but for all ages, averages 5.6 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.* Carriers: None in man.
(2) *Isolation.* None.
(3) *Quarantine.* None.
(4) *Specific therapy.* None.
(5) *Immunization.* None.
(6) *Concurrent disinfection.* None.
(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Thorough cooking, or curing of meat. (Thermal death point of parasite 131°F.)
(2) Refrigeration of meat at 5°F. for twenty days.
(3) Extermination of rats, especially around meat shops and slaughter houses and hog pens.
(4) Cooking of swill and offal to be fed to hogs.
(5) Microscopical inspection of pork unreliable and frequently misleading.

## TUBERCULOSIS (PULMONARY)

### In Children and in Adults

A distinction should be made between the childhood type and the adult type of tuberculosis because of medical and epidemiological differences. "The childhood type of tuberculosis is the name adopted to describe the diffuse or circumscribed lesions in the lungs and associated tracheobronchial lymph nodes that result from a first infection of the pulmonary tissue with the tubercle bacillus" (National Tuberculosis Association definition). The main difference between the childhood type and the adult type is that the former represents the reactions caused by the tubercle bacillus on unsensitized tissue, while the latter is a reinfection on sensitized tissue. The childhood type of pulmonary tuberculosis is to be regarded as a stage in the development of pulmonary tuberculosis. The childhood type of tuberculosis is of significance because it is believed to be a precursor of the adult type and because the condition is more amenable to effective treatment than are the later stages.

I. ETIOLOGICAL AGENT. Tubercle bacillus, *Mycobacterium tuberculosis*.

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* History, symptoms, physical examination, X-ray of chest, tuberculin test—(1) history of spitting blood without known cause; (2) history of unexplained pleurisy with effusion; (3) definite parenchymal changes seen in X-ray films of the chest.

In regard to children, there is no correlation between tuberculous infection as determined by the tuberculin test and diminished body weight. Tuberculous infection is recognizable by the tuberculin test, but the test cannot be used to determine the severity of infection. Roentgenological examination is the only means by which the position and extent of latent tuberculous lesions can be determined.

(2) *Laboratory.* Presence of tubercle bacilli in sputum on two or more occasions.

II. SOURCE OF INFECTION. The discharges, or articles freshly soiled with the discharges from any open tuberculous lesions, the most important discharge being sputum. Of less importance are discharges from the intestinal and genito-urinary tracts, or from lesions of the lymphatic nodes, bone, and skin.*

III. MODE OF TRANSMISSION. Usually through the respiratory, occasionally through the digestive tracts by direct or indirect contact with infected person through coughing, sneezing, or other droplet infection, kissing, or using contaminated eating or drinking utensils.

IV. PERIOD OF INCUBATION. Variable and depending on type of disease.

V. COMMUNICABILITY.

(1) *Period and degree of.* As long as the specific organism is being eliminated by the infected person. Tuberculosis is not a highly communicable disease like smallpox or measles. The degree of communicability varies with the virulence and number of bacilli, with the degree of immunity, and the intensity and frequency of the exposure of the individual.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* One of the most prevalent diseases.

(2) *Age and sex distribution.* More fatal in third and fourth decades of life, particularly to females during child-bearing period.

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* Unless otherwise stated remark applies to both adult and childhood types of tuberculosis.

(3) *Racial distribution.* Susceptibility similar regardless of race, when conditions for contact with the infected are similar. Aborigines acquire it in fatal form even when living conditions are favorable, supposed to be due to greater susceptibility of tissue.

(4) *Geographical distribution.* All countries.

(5) *Seasonal distribution.* Only very slight seasonal variations.

(6) *Cyclical distribution.* No special cyclical manifestations.

(7) *Mortality.* High but steadily declining in United States; no longer the chief single cause of death.

(8) Reporting of cases has been so incomplete and so many cases are chronic that it is difficult to determine the case fatality rate. The fatality rate for active cases is high.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.* Familial infection should receive attention.

Carriers: Chronic fibroid cases (not ill with the disease) are the greatest spreaders of tubercle bacilli. Such cases should be hospitalized or otherwise isolated if non-cooperative in protective measures.

(2) *Isolation.* Of open cases in hospital or home most important where there are children in the household.

(3) *Quarantine.* Is not practiced and placarding is of no value.

(4) *Specific therapy.* None.

(5) *Prophylaxis.* No practical vaccination against the disease.

(a) Isolation of dangerous open cases.

(b) Disinfection of discharges containing tubercle bacilli.

(c) Disinfection of clothing and utensils used by open cases.

(d) Cleaning of rooms used by patient.
(e) Pasteurization of milk.
(f) Control and eradication of bovine tuberculosis.
(g) Education of public as to need and importance of specific and general public health measures.

General:

(1) Education of the public regarding danger of exposure and infection in childhood and methods of control.
(2) Adequate case finding and follow-up.
(3) Provision of hospitals for advanced cases and sanatoria for early cases.
(4) Provision of preventoria and open-window schools.
(5) Improvement in housing and better nutrition.
(6) Ventilation and elimination of dust, particularly in industries and public assembly places.
(7) Improvements in personal hygiene and general living conditions.
(8) Separation at birth of babies from mothers with active tuberculosis.

(6) *Concurrent and terminal disinfection.* Useful.

ADDITIONAL SPECIAL MEASURES.

(1) Case finding and registration.
(2) Ample X-ray and laboratory facilities.
(3) Adequate hospital facilities.
(4) Adequate follow-up.
(5) Education of patient, family, and public.
(6) Measures to protect children in own homes, in schools, and in institutions.
(7) Pasteurization of milk.
(8) Eradication of bovine tuberculosis.

### TUBERCULOSIS IN SCHOOL CHILDREN

Children with the following conditions should have special care in a sanatorium:

(1) Those with the adult type of pulmonary tuberculosis, with or without symptoms or signs to indicate that the disease is active.

(2) Those with the childhood type of tuberculosis that show: (a) diffuse or pneumonic parenchymal lesions; (b) those with multiple parenchymal lesions with or without extensive tracheobronchial lymph node involvement; (c) those with uncalcified or slightly calcified tracheobronchial lymph nodes so large that the masses project outward from the hilum and are clearly outlined against the lung parenchyma.

Children with the following conditions should have special care in preventoria, open-air or open-window rooms, or in nutrition classes:

Those with partially calcified tuberculous nodes in the parenchyma of the lung or tracheobronchial nodes, if the children cannot be removed from contact with open tuberculosis, or where the tuberculin reaction is intense, or the lesions unusually large, or where there is evidence of impaired health.

The following types of tuberculous infection are widely prevalent among healthy children and do not require special care:

(1) Those with a positive tuberculin reaction with no lesions demonstrable in the X-ray.

(2) Those with well-calcified parenchymal lesions or associated with tuberculous tracheobronchial lymph nodes demonstrable by X-ray which appear to be well calcified if the child is in good health and not living in contact with an open case of tuberculosis or does not react to the tuberculin test.

Calcified lesions indicate healing, but it should be kept in mind that associated with these there may be caseous nodes which are not revealed by the X-ray. For this reason children showing such lesions should be kept under observation throughout adolescence.

## TUBERCULOSIS
## (Other than Pulmonary)

I. ETIOLOGICAL AGENT. Tubercle bacillus (human and bovine). *Mycobacterium tuberculosis* (*hominis et bovis*).

II. SOURCE OF INFECTION. Discharges from mouth, nose, bowels, and genito-urinary tract of infected humans; articles freshly soiled with such discharges; milk from tuberculous cattle; rarely the discharging lesion of bones, joints, and lymph nodes.

III. MODE OF TRANSMISSION. By direct contact with infected persons, by contaminated food, and possibly by contact with articles freshly soiled with discharges of infected persons.

IV. PERIOD OF INCUBATION. Unknown.

V. COMMUNICABILITY.

(1) *Period.* Until lesions are healed.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

(2) *Isolation, immunization, and quarantine.* None.

(3) *Concurrent disinfection.* Of discharges and articles freshly soiled with them.

(4) *Terminal disinfection.* Cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Pasteurization of milk and milk products, the inspection of meats, and the eradication of tuberculous cattle. Patients with open lesions should be prohibited from handling foods which are consumed raw.

(2) All diagnosed cases of tuberculosis (all forms) should be promptly reported by the physician in charge to the health department. The physician making this report should indicate his desires as to hospitalization of the patients and whether or not he wishes a nurse

to call to give instructions regarding proper disposal of discharges and to observe whether or not proper measures are carried out to prevent the spread of infection. The physician should be requested to tuberculin test or have tested all contacts and have all reactors X-rayed regardless of the signs or symptoms of the disease. It is understood that these reports should not be public records.

(3) Experience suggests that a minimum of one bed for every annual death, provided for the care of tuberculous patients, is inadequate. The number used will depend on the reputation of the hospital or sanatorium and the adequacy of case-finding work being done in the community. Within limits the effectiveness of a hospital may be judged by its waiting list.

*See page 219 for special studies on tuberculosis which are desirable.*

## TULAREMIA

I. ETIOLOGICAL AGENT. *Bacterium tularense; Pasteurella tularensis.*

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical symptoms.*

(2) *Laboratory.* Animal inoculation and agglutination reactions.

II. SOURCE OF INFECTION. Wild rabbits and hares, horse fly (*Chrysops discalis*), wood tick (*Dermacentor andersoni* and *Dermacentor variabilis*) woodchuck, coyote, muskrat, opossum, tree squirrel, quail, skunk, and water rat of Europe (*Arvicola amphibius*).

III. MODE OF TRANSMISSION. By bites of infected flies and ticks and by inoculation through handling infected animals as in skinning, dressing, or performing necropsies on infected animals, or by fluids from infected flies, ticks, rabbits, and woodchucks. Rare cases occur from bites of coyotes, skunks, and hogs where the mouth of the animal was presumably contaminated from eating infected rabbits.

IV. PERIOD OF INCUBATION. From twenty-four hours to ten days, average slightly more than three days.

V. COMMUNICABILITY. There is no authentic record of transfer of the disease from man to man. The infection has been found in the blood during the first two weeks; in conjunctival scrapings up to seventeen days; in the primary lesion on the finger up to seventeen days; in the sputum on the twelfth day; in lymph glands up to fifty-three days; in ascitic fluid (taken during life) three months after onset; in the spleen taken at autopsy up to twenty-six days. Flies are infective for fourteen days, ticks throughout their lifetime. Refrigerated rabbits may remain infective for three months, but not for four months.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
(2) *Isolation.* None.
(3) *Quarantine.* None.
(4) *Specific therapy.* None.
(5) *Specific prophylaxis.* None.
(6) *Concurrent disinfection.* Disinfection of discharges from the ulcer, lymph glands, or conjunctival sac.
(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Avoidance of the bites or handling of flies and ticks when working in the infected zones during the seasonal incidence of blood-sucking flies and ticks.
(2) The use of rubber gloves by persons engaged in dressing wild rabbits, wherever taken, or when performing necropsies on infected laboratory animals. Employment of immune

persons for dressing wild rabbits or conducting laboratory experiments. Thorough cooking of meat of wild rabbits. Refrigeration of wild rabbits for three months previous to dressing them.

## Typhoid Fever

I. ETIOLOGICAL AGENT. Typhoid bacillus, *Eberthella typhi.*

I a. DIAGNOSTIC CRITERIA.

(1) Clinical symptoms confirmed by (2) specific agglutination test and bacteriological examination of blood, bowel discharges, or urine.

II. SOURCE OF INFECTION. Bowel discharges and urine of infected persons and carriers, infrequently by sputum. Healthy carriers are a common cause of outbreaks.

III. MODE OF TRANSMISSION. Conveyance of the specific organism by direct or indirect contact with a source of infection. Among indirect means of transmission are contaminated water, milk, and shellfish, and other foodstuffs. Contaminated flies may be a means of transmitting the disease.

IV. PERIOD OF INCUBATION. From seven to twenty-three days, averaging ten to fourteen days.

V. COMMUNICABILITY.

(1) *Period.* From the appearance of prodromal symptoms, and occasionally before, throughout the illness and relapses during convalescence, and until repeated bacteriological examinations of the discharges show persistent absence of the infecting organism.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

Carriers: Carriers constitute a serious problem in the control of typhoid fever as individuals may carry the typhoid bacillus for long periods and exhibit no symptoms of the disease. The control consists in their discovery, in their being placed under observation by the health department, in their agreeing to refrain from occupations of food or milk handling, and to observe special sanitary care to prevent transfer of the causative agents.

(2) *Isolation.* In flyproof room, preferably under hospital conditions, of such cases as cannot command adequate sanitary environment and nursing care in their homes. Release from isolation should be determined by at least two successive negative cultures of stool and urine specimens collected not less than twenty-four hours apart.

(3) *Quarantine.* None.

(4) *Specific therapy.* None.

(5) *Immunization.* Of susceptibles in the family or household of the patient who have been exposed and of those who by residence, travel, or occupation are likely to be exposed to the disease.

(6) *Concurrent disinfection.* Disinfection of all bowel and urinary discharges and articles soiled with them.

(7) *Terminal disinfection.* Cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Protection and purification of public water supplies.

(2) Pasteurization of public milk supplies.

(3) Supervision of other food supplies and of food handlers.

(4) Prevention of fly breeding.

(5) Sanitary disposal of human excreta.

(6) Extension of immunization by vaccination, as far as practicable, in communities where the disease is prevalent.

(7) Supervision of typhoid carriers and their exclusion from the handling of foods.

(8) Systematic examination of fecal specimens from those who have been in contact with recognized cases to detect carriers.

(9) Persons who fail to show a strongly positive Widal reaction and contemplate traveling should protect themselves by vaccination.

(10) Exclusion of suspected milk supplies pending discovery of the person or other cause of contamination of the milk.

(11) Exclusion of water supply, if contaminated, until adequately treated with hypochlorite or other efficient disinfectant, or unless all water used for toilet, cooking, and drinking purposes is boiled before use.

## Typhus Fever

I. ETIOLOGICAL AGENT. *Rickettsia prowazeki* is believed to be the causative agent.

II. SOURCE OF INFECTION. The only known source is the blood of infected individuals in recognized or missed cases.

III. MODE OF TRANSMISSION. Infectious agent transmitted by lice. (*Pediculus corporis, P. capitis.*) The possibility of transmission by some other acarinoid as a tick or a mite has been suggested by recent epidemiological data.

IV. PERIOD OF INCUBATION. Five to twenty days, usually twelve days.

V. COMMUNICABILITY.

(1) *Period.* Until thirty-six hours have elapsed after the temperature reaches normal.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

(2) *Isolation.* In a vermin-free room. All attendants should wear vermin-proof clothing.

(3) *Quarantine.* Exposed susceptibles for fourteen days after last exposure.

(4) *Specific therapy.* None.

(5) *Immunization.* Methods for immunization not generally accepted.

(6) *Concurrent disinfection.* None.

(7) *Terminal disinfection.* Destroy all vermin and vermin eggs on body of patient, if not already accomplished. Destroy all vermin and eggs on clothing. Rooms to be rendered free from vermin.

ADDITIONAL SPECIAL MEASURES.

Delousing of persons, clothing, and premises during epidemics, or when they have come or have been brought into an uninfected place from an infected community.

## UNDULANT (MALTA) FEVER

(*Brucelliasis*)

I. ETIOLOGICAL AGENT. *Micrococcus melitensis, Brucella melitensis, Bacillus abortus, Brucella suis.*

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Irregular fever of uncertain duration, profuse sweating, chills (or chilliness), pain in joints and muscles.

(2) *Laboratory.* Agglutination test. Culture of etiological agent from blood, tissues, or discharges of patient.

II. SOURCE OF INFECTION. The milk of infected cows, goats, and other infected mammals; the urine of infected goats and probably that of other infected domestic animals; the discharges from the genital tract and expelled uterine contents of aborting infected animals; the carcasses and by-products of slaughtered infected animals; possibly the feces of infected domestic animals and the feces and urine of infected persons.

III. MODE OF TRANSMISSION. By ingestion of the milk from infected animals; by direct contact with infected livestock and the discharges from the genital tract of infected females; by inoculations through abrasions of the skin or conjunctiva; by inoculation through the unbroken skin or conjunctiva; by contact with blood, organs, or carcasses of slaughtered infected animals.

IV. PERIOD OF INCUBATION. Minimum six days; maximum unknown; average fifteen to thirty days.

V. COMMUNICABILITY. Communicability from person to person rarely, if ever, takes place.

(1) *Immunity.* Most persons have considerable natural immunity (especially to the abortus varieties of the etiological agent), or may acquire some immunity by ingestion of small doses of the causal organism. Experimental work on laboratory animals indicates that an attack of the disease confers immunity.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Low, if rate is based on total population.
(2) *Age and sex distribution.* Relatively rare in ages below twelve; more frequent in males than females (about 3.1).
(3) *Racial distribution.* Apparently affects all races.
(4) *Geographical distribution.* Present in every state of the United States; also in other countries.
(5) *Seasonal distribution.* Undetermined. Apparently more prevalent in summer months (May to October).
(6) *Cyclical distribution.* None observed.
(7) *Mortality.* Low.
(8) *Case fatality.* About 3 per cent.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

Carriers: No "carrier problem" has yet arisen. Disinfection of infectious discharges of carriers and prohibition of the carriers from engaging in cooking, food handling, and so forth.

(2) *Isolation.* None.

(3) *Quarantine.* None.

(4) *Specific therapy.* None of proven value.

(5) *Immunization.*

Prophylaxis: No specific immunologic prophylaxis has proven satisfactory. Prophylactic measures: (a) Pasteurization of milk; (b) examination of livestock to determine infected animals and elimination of same from herd, either by slaughter or segregation of infected animals; (c) education of public and particularly of persons working in slaughter houses, meat packing establishments, and butcher shops, as to the nature of the disease and danger of contracting same from handling carcasses of infected slaughtered animals.

(6) *Concurrent disinfection.* Is advisable though the disease rarely, if ever, is transferred from person to person.

ADDITIONAL SPECIAL MEASURES.

(1) Sterilization of goat's milk.

(2) Report infected, or suspicious, livestock to proper veterinary authorities.

(3) Cooperate with agricultural, veterinary, or other officials and with livestock owners in eradication of disease from livestock.

## Vincent's Angina

I. ETIOLOGICAL AGENT. *Bacillus fusiformis* (*Fusiformis dentium*).

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Ulcero-membranous inflammation showing yellowish gray exudate easily removed, leaving a raw bleeding surface and later a punched-out appearance; slight temperature; pain on swallowing; enlarged and tender lymph nodes. The most marked feature is a peculiar redness. The condition might be called erysipelas of the mouth.

(2) *Laboratory.* Spreads show many straight or slightly curved rods, with tapering ends, mostly gram negative with faintly staining granules. Usually accompanied by many spirochetes (*Borrelia vincenti*) whose rôle in the disease is not yet determined. Both are anaerobes.

II. SOURCE OF INFECTION. Discharges from lesions and from carriers.

III. MODE OF TRANSMISSION. Direct contact with patient or carrier.

IV. PERIOD OF INCUBATION. Variable.

V. COMMUNICABILITY.

(1) *Period and degree of.* As long as the bacillus is present; slight degree of communicability.

(2) *Natural and acquired immunity.* Not determined but no specific acquired immunity evident.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Incidence low; higher in undernourished and in those having diseased teeth.

(2) *Age and sex distribution.* Comparatively higher in children.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

(2) *Isolation.* Active cases not under treatment should be isolated without quarantine. Children may attend school if under treatment and if proper precautions are taken to prevent transfer of the disease to other children.

(3) *Quarantine.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Strict oral hygiene. Sodium perborate seems to be the most specific for prevention and treatment.

(2) Adequate treatment should be provided or enforced.

## WHOOPING COUGH

I. ETIOLOGICAL AGENT. In all probability *pertussis bacillus* of Bordet and Gengou, *Hemophilus pertussis.*

I a. DIAGNOSTIC CRITERIA.

(1) *Clinical.* Development of characteristic paroxysmal cough.

(2) *Laboratory.* Lymphocytosis; bacteriological examination by cough plate method is impracticable as a routine.

II. SOURCE OF INFECTION. Discharges from the laryngeal and bronchial mucous membranes of infected persons.

III. MODE OF TRANSMISSION. Contact with an infected person or with articles freshly soiled with the discharges of such persons.

IV. PERIOD OF INCUBATION. Commonly seven days, almost uniformly within ten days and not exceeding a sixteen-day maximum.

V. COMMUNICABILITY.

(1) *Period and degree of.* Readily communicable. Particularly communicable in the early catarrhal stages before the characteristic whoop makes a clinical diagnosis possible. The catarrhal stage occupies from seven to fourteen days. After the characteristic whoop has appeared the communicable period continues, probably for three weeks. Even if the spasmodic cough with whoop persists longer than this, it is most unlikely that the infecting organism can be isolated from the discharges. The communicable stage must be considered to extend from seven days after exposure to an infected individual to three weeks after the development of the characteristic whoop.

(2) *Immunity.* Natural: Little or no immunity in early infancy. Acquired: A high degree of immunity is conferred by an attack. Immunity increases with age, presumably due to larvate attacks which are quite common in older children and in adults. The immunizing value of whooping cough vaccine is doubtful both as to degree and duration.

V a. STATISTICAL EPIDEMIOLOGY.

(1) *Prevalence.* Very prevalent.

(2) *Age and sex distribution.* About half the reported urban cases occur during first five years of life, 90 per cent during first ten. More prevalent and more fatal among females.

(3) *Racial distribution.* Attacks all races.

(4) *Geographical distribution.* See Measles; less prevalent in the tropics than in cooler climates.

(5) *Seasonal distribution.* Little seasonal fluctuation. Season of greatest prevalence varies

from year to year. Mortality is greatest during spring and summer.

(6) *Cyclical distribution.* Irregular.

(7) *Mortality.* One of the chief causes of death in children. About 50 per cent of deaths are in children under one year old; 95 per cent are in children under five years.

(8) *Case fatality.* In general, probably not over five per one thousand cases but during first two years of life very fatal, probably 75–100 deaths per one thousand cases under one year and about 30–40 at age of one. Rate very low during school years. Especially fatal in rachitic and undernourished children living under unhygienic conditions.

## VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of sources of infection.*

Carriers: True carriers (i.e. individuals having no cough or other symptoms) are not known to exist. Many supposedly susceptible contacts however fail to show any characteristic symptoms and probably an appreciable percentage of these are individuals who have previously had an atypical attack. No effective way of discovering or handling these is known.

(2) *Isolation.* Because of the long period of communicability, isolation of cases is impracticable except in children up to two years old. Isolation should be advised to reduce chances of picking up secondary infections but never at the expense of fresh air or open air if weather permits.

(3) *Quarantine.* None, except in institutions.

(4) *Specific therapy.* Vaccine treatment of doubtful value. No other specific therapy.

(5) *Immunity.* For active, use of vaccine doubtful; no passive.

(6) *Concurrent disinfection.* Discharges from the nose and throat of the patient and articles soiled with such discharges.

(7) *Terminal disinfection.* Cleaning.

ADDITIONAL SPECIAL MEASURES.

(1) Should be designed primarily to reduce mortality since no method of prevention has proven even reasonably successful in reducing the morbidity. Since 80 per cent of the deaths occur during the first two years of life, efforts should be concentrated on protecting small children and seeing that they have good care if attacked. This can probably only be done by repeated efforts to instruct parents through printed matter and personal visits, using birth register as primary means of discovering them. As epidemics are not explosive but usually cover a period of many months, a method should be developed to accomplish this systematically. Although it is justifiable to require that cases shall not be permitted to come in contact with other children, mothers of infants and younger children should not rely on it for protection. Even in tenement districts, it is not impossible to prevent infants coming in contact with those likely to convey infection while the disease is present in the family or neighborhood. As the appeal here is to self-interest rather than to altruism (or patriotism) cooperation is more likely to be secured. To continue to penalize whatever cooperation is obtained with burdensome restrictions while flagrant offenders go untrammeled and unpunished is to defeat the very end sought.

(2) Education in habits of personal cleanliness and in the dangers of association or contact with

those showing catarrhal symptoms with cough.

## Yellow Fever

I. ETIOLOGICAL AGENT. Undetermined, but known to be a filterable virus.

I a. DIAGNOSTIC CRITERIA. Practically all clinical diagnosis made on clinical symptoms, most marked of which are headache, backache, congestion of mucous membranes, and prostration with history of possibility of having been bitten by infected mosquitoes.

II. SOURCE OF INFECTION. The blood of infected persons.

III. MODE OF TRANSMISSION. By the bite of infected *Aedes aegypti* mosquitoes or a few allied species of the same family.

IV. PERIOD OF INCUBATION. Three to five days, occasionally six days.

V. COMMUNICABILITY.

(1) *Period and degree of.* First three days of the fever; degree high where infected mosquitoes exist.

(2) *Natural and acquired immunity.* No natural immunity. An attack produces active immunity.

VI. ADMINISTRATIVE MEASURES.

(1) *Investigation of source of infection.*
Carriers: Human carriers not known.

(2) *Isolation.* Isolate from mosquitoes in a special hospital ward or thoroughly screened room. It is necessary that the room or ward be freed from mosquitoes. Isolation necessary only for the first three days of the fever.

(3) *Quarantine.* Contacts for six days. Placarding not necessary.

(4) *Specific therapy.* None.
(5) *Immunization.* Use of convalescent serum will produce a passive immunity.
(6) *Concurrent disinfection.* None.
(7) *Terminal disinfection.* None.

ADDITIONAL SPECIAL MEASURES.

(1) Eliminate mosquitoes by rendering breeding impossible.
(2) Inspection service for the detection of those ill with the disease.
(3) Destruction of *Aedes aegypti* mosquitoes through use of larvicides, eradication of breeding places, or in other ways.
(4) Elimination of stagnant water near human habitations.

# SUMMARY

THE outstanding facts brought out in this report are:

A. The knowledge of control in many communicable diseases far exceeds its practical application. If all that is known about communicable disease control were generally applied, there would be a marked reduction in prevalence.

B. There are, however, many gaps in our knowledge concerning certain diseases, such as the relative importance of the various factors contributing to the spread of disease, the specific causative agents, and many other matters which, if known, would greatly simplify and focus efforts toward control.

C. Consequently, differences in opinion and practice exist concerning the procedures to be followed to prevent or diminish the prevalence of communicable disease. Such differences of opinion will be resolved only when more precise knowledge is available.

A few of the more important items in the report are:

The need for a more satisfactory determination of relative values of factors which control the spread of infection.

The necessity for well-equipped, full-time public health service with competent personnel for urban and rural districts, with adequate community support and legal powers relative to all phases of preventive medicine.

Adequate compensation for those engaged in public health work that those qualified may be encouraged to enter the field.

Striking results have been obtained in many diseases so that yellow fever, cholera, and plague are almost unknown in the United States. Smallpox, typhoid fever, and even diphtheria in some sections of the country are becoming rare.

Where the causative agents and methods of control of communicable diseases are known and these methods are used, they can be practically eliminated.

The greatest recent progress has been in the control of diphtheria and typhoid fever; in the former, because the interest of the public has been awakened, and because a preventive which is specific and effective has been discovered; and in the latter, mainly through general sanitary improvements, but also through personal immunization.

Some of the diseases which once took the heaviest toll of child life have been forced to occupy lower places in the list, so that those that now hold the place of greatest importance are diseases for which adequate means of prophylaxis or control have not been discovered. This indicates that there is still much to be done through laboratory, clinical, and field research to discover better methods of prevention and control.

There is lack of effort and effectiveness in control practice in various parts of the country. Nevertheless, all States and most individual communities are showing an increased interest in the control of communicable diseases by gradually adopting approved methods and practices.

The best practices for the control of each communicable disease, so far as known, have been summarized in the body of the report, and therefore are not repeated here.

# RECOMMENDATIONS

## CONTROL OF DISEASE

It is recommended that:

I. Provision be made for the establishment of well-organized health departments with full-time trained personnel having facilities for rendering aid in diagnosis, making epidemiological studies, giving information, and aiding in the prevention and control of communicable disease in every city and rural community in the United States and that sufficient funds be provided to make this possible.

II. As in rural districts only 505 counties representing 24 per cent of the rural population of the United States have full-time health service, an effort be made to provide the other 76 per cent with such service as soon as practicable.

III. To avoid confusion and in the interest of effective administration, a united effort be made to have adopted, as far as practicable when climatic, geographic, and other local factors are taken into account, uniform rules and regulations for the same disease. All rules and regulations should be based, not on tradition, but on practical needs and possibilities as determined by experience and scientific investigation. Such rules should differentiate in their application between immune and susceptible persons, and where differences of communicability exist between adults and children.

IV. For the diseases among children for which specific means of immunization are available (such as smallpox and diphtheria) continuous programs be carried out until the more desirable method of making immunization a part of the routine care of the infant by the family physician has become the rule.

V. The value and necessity of protection from disease be made not only part of the preschool and school health program, but also that it be brought prominently before the adult population at all favorable opportunities.

VI. All communities be urged to safeguard their people by providing proper facilities for the adequate supervision and treatment of their milk and water supplies and satisfactory disposal of human waste, because of the interrelationship between these and the spread of intestinal diseases including typhoid fever.

VII. Encouragement be given to the improvement of housing and working conditions, and of recreational facilities because of their relation to child health.

VIII. Adequate hospital and other facilities be provided for the care of patients with communicable disease (including tuberculosis, gonorrhea, and syphilis).

IX. Provision be made for an adequate public health nursing service, because of the usefulness of public health nursing in the administrative control of communicable disease control.

X. Facilities be provided to avert, or reduce to a minimum the disability which may ensue, for those communicable diseases such as infantile paralysis which are prone to cause serious after-effects.

XI. Practicing physicians, local, state, and federal authorities cooperate fully in giving prompt information about communicable disease cases which may contribute towards control or add to our knowledge.

XII. Medical schools give more attention to the training of their students in regard to the public health responsibilities of physicians.

XIII. On account of the importance of the carrier in the spread of certain diseases, efforts be made to discover and properly control all such sources of infection.

XIV. The control of communicable disease be unified under the local health authority. In anticipation of epidemic emergencies all resources for control be organized for prompt mobilization under the local health authorities.

XV. The satisfactory control and prevention of disease requires precise knowledge of the cause, recognition, and modes of spread of communicable diseases. This knowledge is lacking for many diseases. It is therefore recommended that investigations in the laboratory, at the bedside, and in the field be promoted.

### ADDITIONAL STUDIES AND RESEARCH

It is recommended that:

I. Laboratory and field research be carried on for those diseases for which satisfactory means of prevention and control have not yet been discovered. Adequate funds should be made available for these studies.

II. Studies of communicable disease be made by competent persons provided with opportunity for intensive epidemiological observations on a significant number of cases in different communities, in an effort to determine improved methods of control.

III. While it is recognized that the field of studies needed in the control of communicable disease is practically limitless, and while it is recognized that many fundamental studies are now under way, the Committee realizes that the value of its recommendations will be increased if specific lines are suggested. It therefore presents the following as illustrations:

*Meningitis.* Studies should be made to discover means of detecting susceptibles, and to determine the minimum requirements to control epidemic spread.

*Scarlet Fever.* Continued studies should be made on the value of convalescent serum, on the production of immunity by inunction, on the advisability of releasing adult cases earlier than child cases, and on the practical use of release cultures.

*Syphilis and Gonorrhea.* Studies should be made to determine how much can be done to control venereal diseases. These studies should involve their clinical, laboratory, and epidemiological aspects.

*Whooping Cough.* Further studies should be made on the use of vaccines and diagnostic cultures, as well as other possible control methods.

*Tuberculosis.* (1) Studies should be made on the home treatment of tuberculosis not as supplanting but as supplementing hospital care and treatment; (2) systematic examination of school children in third, sixth, ninth and twelfth grades, using tuberculin test and X-ray; (3) special study of causes of high death rate for adolescent girls (twelve to twenty years) with all relative information; (4) a tuberculin test with X-ray of at least one thousand girls in different industries, compared with like groups in high schools; (5) study of incidence of tuberculous infection among children, beginning with infancy and following through to adolescence; (6) study of tuberculosis problem among colored (Negro death rates from tuberculosis are not declining in northern cities); (7) further study on the chemistry of the tubercle bacillus.

*Poliomyelitis.* Further studies are needed on the adequate control of this disease.

*Hookworm.* Surveys should be made by the egg-counting method to determine the present status of infestation with hookworm, to evaluate the present importance to health of children, and to stimulate extension of environmental sanitation.

*Trachoma.* Further studies should be made on its etiology, prophylaxis, and therapy.

*Common Cold.* Additional studies are urgently needed.

IV. Studies should be made to determine the value and methods of general use of convalescent serums for prophylaxis against measles, chicken pox, mumps, and possibly whooping cough.

V. As much of our knowledge of disease and its control has resulted from properly conducted experimentation on animals, there should be no attempt to restrain the use of animals for this purpose, so long as the experiments are conducted with due regard to the sensibilities of the animal used as well as to the benefits accruing to both human beings and animals from such experimentation.

VI. Studies should be specially directed toward the most direct and reliable means of discovering carriers of disease, and the most satisfactory methods of curing or otherwise handling, effectively, those discovered.

VII. The state, city and rural health units, the communicable disease hospitals, laboratories in medical schools and colleges, as well as those institutes established by the United States Government and philanthropies for research work, should be encouraged to make investigations of communicable diseases and improved methods for their suppression.

# APPENDIX

## RECENT ACCOMPLISHMENTS BY STATES AND THE LARGER CITIES IN CONTROL AND SOME MEASURES USED

An attempt was made to find out what was being accomplished in communicable disease control by correspondence with the forty-eight States of the Union and the District of Columbia and with a few of the larger cities. Data were obtained from all the States and the District of Columbia and from twenty-three of the twenty-five cities appealed to for information. These twenty-three cities represented a total population of 23,987,342 according to the Federal Census of 1930, or nearly one-fifth of the total population of the country.

The specific information sought from the States was as follows:

(1) What progress has the State recently made in the control of any one or more of the communicable diseases?

(2) What changes have recently been made in the State's rules and regulations? A summary of the practices in the different States had been made as of 1926 and presented to the meeting and published as a part of the proceedings of the Association of State and Provincial Health Authorities in June 1927. This question was submitted to find out the more recent trends of regulations for communicable disease control.

(3) The health authorities were asked to express themselves freely as to specific changes that might profitably be made in regulations in general or in their own State rules in particular.

The cities were asked the following two questions:

(1) A question similar to question No. 1 submitted to the States.

(2) A question on the use being made locally of serums or vaccines prophylactically, immunologically, or therapeutically for different diseases and what results in general were being obtained.

The answers received are very briefly summarized in the pages to follow. More detailed data on accomplishments in communicable disease control have been omitted for the sake of brevity.

The one disease singled out by practically all States for special mention as to success in recent control, is *diphtheria.* Thirty-two States and practically all cities reporting commented on their success in reducing diphtheria.

The cause of the more recent reduction was ascribed to immunization programs in which diphtheria toxin-antitoxin or toxoid had been used. The success of the program depended on the completeness of organization, the effectiveness of the educational methods used, and the response of the parents to the appeal.

The second disease mentioned as indicating conspicuous success in reduction was *typhoid fever.* More than twenty of the States and most of the cities reported recent material reductions in typhoid. The improvement was ascribed mainly to supervision and treatment of water and milk supplies, to improvement in disposal methods of human wastes, to search for and control of carriers, and in special instances, to general immunization of the public against typhoid.

These statements are in accord with the recently revised report * of the American Medical Association and the National Educational Association in which it is stated that since 1900 there has been a reduction of 95 per cent in the mortality rate from diphtheria, a reduction which was matched by that for typhoid and paratyphoid fever, which in 1900–04 had an average mortality for the registration area of the United States of 34 per 100,000 population, whereas in 1928 the rate had dropped to 4.9. The average mortality rate from diphtheria in 1900–04 was 33.7 per 100,000 population.

The disease which stood next in order of mention by States as showing marked reduction and success with methods of control was *tuberculosis.* The federal census figures show that the death rate from tuberculosis has decreased from an average of 194 per 100,000 population in 1900–1904 to

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* *Health Education* (Rev. Ed.). Report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, New York City, 1930, p. 18.

79 in 1928. The joint report mentioned above estimates that notwithstanding this decrease, the yearly care of the tuberculous in the United States is still costing this country $800,000,000, and that while the death rates for the disease are decreasing markedly as a whole, as yet no very definite reduction is being made in the death rate of the female age group between fifteen and twenty-four years.

The improvement in tuberculosis is ascribed to a combination of many factors, such as improved economic conditions (with better housing and food), better industrial conditions, educational propaganda, and in particular, better facilities for caring for cases and better means of detecting the disease in its early stages.

Other diseases which some States and cities reported as yielding to local measures for control were meningococcus meningitis, malaria, diarrhea and enteritis, scarlet fever, measles, whooping cough, poliomyelitis, tularemia, Rocky Mountain spotted fever, hookworm, and pellagra, in descending order as to number of places so reporting.

### RECENT CHANGES IN STATE REGULATIONS FOR CONTROL

Some indication of the tendencies in communicable disease control can be obtained by comparing the changes made in the regulations within the last four years; that is, since the last summary of current practices was made and published by the State and Provincial Health Officers.* In general, it would seem that rules and regulations are becoming pretty well standardized and stabilized, as about 60 per cent of the States report no changes or only very minor ones since 1926.

Where changes have been made the tendency is to make greater differentiation between contacts as to whether immune or non-immune and as to whether they are adults or children. Again there is a tendency to reduce the length of isolation or quarantine for some diseases where the disease is in very mild form or where adequate supervision is provided to see that privileges are not abused. With the increase in knowledge of the spread of transmissible disease and with more adequate health organization, rules do not always require to be of the same sweeping, comprehensive nature as those once promulgated.

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* *Report of Committee on Communicable Disease Practice.* Proceedings of the 42nd Annual Meeting, 1927, page 46.

There are still, however, great variations in the control practices in different States for the same disease, as shown in the report referred to, but such changes as are now being made are in general to bring the State rules into conformity with what is generally recognized as good practice, and the American Public Health Association Handbook on Communicable Disease Control of 1926 has almost universally been used as the standard toward which to conform.

### CHANGES MADE IN STATE RULES AND REGULATIONS SINCE 1926

*Arizona* reports that the only recent change in the State rules and regulations is in regard to meningococcus meningitis which put the disease under "absolute quarantine." This means that contacts as well as cases must be quarantined and isolated for fourteen days from exposure unless two cultures taken from nose and throat prove negative—similar negative cultures are required for the release of the case.

*California* has included paratyphoid with typhoid in its regulations. More restrictions are placed on typhoid contacts and there is a definite requirement for release. For meningococcus meningitis—for patients, twenty-one days' isolation now required; contacts to be under observation of Health Officer for fourteen days.

No relaxation of rules can be made by health officer as rules are the minimum requirements. There is no general State regulation regarding exclusion from public gatherings. More restrictions are placed on immune contacts with smallpox as it is thought they may carry the disease. More latitude is allowed in requirements where well-organized local health departments exist; for example, contacts with mumps may attend school for two weeks after exposure and contacts with measles and chickenpox one week, before being excluded.

*Colorado.* The rules and regulations for this State were revised and rewritten in 1927. The changes made were mainly such as to bring the rules into line with the general rules as set forth in the American Public Health Association Handbook. The definitions of isolation and quarantine as given in that handbook were adopted, which has led to some confusion on the part of physicians as they think of quarantine in terms of the definition given for isolation.

*Connecticut.* The only change recently made in the sanitary code is in regard to the suggestion that there should be laboratory tests for meningococcus meningitis. There is now no requirement that cultures be made from the nasopharynx.

*Delaware.* A few changes in 1927, but communication did not state what they were. The changes brought the rules into close conformity with the American Public Health Association Handbook.

*Illinois* reports the following changes in rules and regulations since 1926: Restrictions on all contacts removed for chickenpox, meningococcus meningitis, German measles, septic sore throat, mumps. For chickenpox—minimum isolation of patient reduced from ten to seven days. For diphtheria—exposed non-immune children released after seven days' quarantine instead of requiring two negative cultures, and minimum isolation of patient reduced from twenty-one to sixteen days. Meningococcus meningitis—minimum isolation of patient reduced from fourteen to ten days. Measles—period of isolation of patient changed to four days before and until five days after the appearance of rash. Mumps—minimum period of isolation of patient reduced from ten to seven days. Scarlet fever—restriction of exposed non-immune children changed from quarantine to seven days under observation in placarded premises. No quarantine for immune children. Smallpox—non-immune contacts may be removed from premises and freedom of action granted, provided specified and well-known precautions against spreading the disease are observed. Typhoid fever—non-immune contact residents of the premises are required to be immunized. Patients are released after two negative cultures, twenty-four hours apart, formerly thirty days after normal temperature. Septic sore throat—isolation of patient during clinical course of disease.

*Iowa.* Changes have been made in the Iowa regulations, particularly in reference to allowing exposed susceptible children (who by former rules were excluded) now to attend school, where "they are under daily inspection by a school nurse, the health officer, or other physician." This applies to chickenpox, mumps, and measles.

Changes have also been made in reference to school attendance and vaccination requirements, setting forth that boards of health and school boards have the right to exclude from school, pupils not protected by vaccination when a situation exists that threatens the public health.

*Kansas.* The only diseases for which there have been recent changes in the State rules and regulations are scarlet fever and whooping cough. Scarlet fever must be reported, placarded, excluded from school and public gatherings, isolated, and both concurrent and terminal disinfection carried out. According to present rules, household contacts may not appear in public for twenty-eight days, although with the approval of the local health officer, wage-earners may be exempted from such restriction. Adults and immune children may be released to live elsewhere. Children who are known to be immune may be released to live elsewhere, and if at the end of seven days they have no signs of the disease they may get final release, but must not return to the home for twenty-eight days, which is the minimum period of quarantine. Teachers of schools in contact with a case must not return to school for seven days. Scarlet rash is subject to the same rules as scarlet fever.

For whooping cough there has been added to the former rule the following: "Owing to the difficulty of making a positive diagnosis in mild cases of this disease, due to the absence of the characteristic whoop in 50 per cent of the cases, it is ruled that whenever the health officer declares the disease to be epidemic in the community, all children under fourteen years of age having a paroxysmal cough which continues for one week, must be immediately reported to the local health department, so that proper precautions may be taken to protect the public health until a definite diagnosis can be made."

*Kentucky* reports many changes made in its regulations since 1926. Thirteen diseases were added to the reportable list; bronchial pneumonia and puerperal septicemia are no longer required to be reported; a new section on definitions has been added. Isolation for cholera, influenza, and septic sore throat is now required and the period of isolation for whooping cough has been changed from eight weeks after onset of the disease to four weeks after the onset of the cough. A "writ of quarantine" for venereal disease has been added. There has also been included an outline of the epidemiology of the common communicable diseases, bringing the rules into the general form of the American Public Health Association Handbook. Fumigation has been discarded as valueless and as misleading by giving the people a false sense of security.

*Maine.* No changes other than to add undulant fever to the list of reportable diseases.

*Massachusetts.* The only changes are that for typhoid fever, the minimum requirements now recommend two negative stool and urine specimens taken a week apart before the case is released from observation.

*Michigan.* Changes have been made in the rules and regulations of this State. The main revisions, however, were to produce clarity and completeness rather than to make changes in existing rules. For example, the minimum period of isolation for smallpox, provided lesions had disappeared, was reduced from sixteen to ten days; for meningococcus meningitis, a definite period for minimum isolation was stated, viz., fourteen days; for typhoid fever, a placard was no longer required; for whooping cough, isolation period was reduced to three instead of four weeks after the development of the characteristic whoop; for chickenpox, a minimum period of isolation, fourteen days, was defined, as well as the requirement that the skin should be clear; for mumps, the isolation period was extended from ten days to two weeks after onset of symptoms; for German measles, a definite isolation minimum period of one week was defined as against the former rule which stated "until fully recovered"; for septic sore throat, the isolation period was changed from fourteen days to "until complete recovery." The revised rules make provision for differentiating between immune and non-immune children, and between adults and non-immune children for the diseases peculiarly children's diseases, and for the control and supervision of carriers. "Terminal fumigation is neither recommended nor required, except the use of sulphur fumes in cases of insect-borne diseases such as typhus fever."

*Montana.* No changes, except to empower the health officer to transfer a tuberculous patient to a sanatorium when considered advisable.

*Nebraska.* No changes, except that fumigation is abolished, and terminal disinfection is substituted for it.

*New Jersey.* The only changes made in the rules and regulations since 1926 have been made in 1930 and are to go into effect on July 1st of this year: Mumps, tetanus, tularemia, undulant fever and lethargic encephalitis are made reportable and a regulation goes into effect in regard to exposures to ordinary communicable diseases whereby exposed persons may be prohibited from attending school or public gatherings, and may even be prohibited from leaving the premises up to the maximum period of incubation as defined for each disease. (Apparently no differentiation is made between immune and non-immune exposures.)

*New York* has recently made extensive changes in its regulations, both for the purpose of clarifying them and bringing them into conformity with sound practice. Four diseases have been made subject to absolute quarantine; viz., smallpox, cholera, plague and typhus fever, and four to modified quarantine; viz, diphtheria, meningococcus meningitis, poliomyelitis and scarlet fever. For other diseases isolation of the case or reporting of it alone is required. All diseases requiring quarantine, absolute or modified, for contacts, require isolation of the case. A distinction is now made between personal quarantine and quarantine of premises. This latter includes placarding. For personal quarantine (of contacts) no placard is required. There is no personal quarantine for poliomyelitis; that is, there are no restrictions on contacts no longer associated with the case. No restrictions are placed on whooping cough cases other than that they must not associate with children or attend public assemblies, and when away from home premises must be supervised by an adult to prevent contact with children. Two negative specimens of feces are required for typhoid cases, and four of feces and urine in the case of food handlers. If this is not done, the individuals will be under the restrictions imposed on carriers. An important change is the requirement that the health officer shall investigate possible sources of infection, collect specimens for laboratory examinations and instruct the family in methods of prevention, including measures for producing immunity. Another recent requirement is that venereal disease must be reported directly to the local health officer. It is believed that minimum restrictions should be placed on cases and contacts of diseases with low fatality rates. Placarding for such diseases should be discontinued and fumigation abolished for all diseases except those which are insect-borne.

*North Carolina.* Since 1926, pneumonia, pellagra, influenza, typhus fever, anthrax, and tularemia were added to the list of reportable diseases, but quite recently pneumonia was struck off the list. The only other change in regulations was the reduction of the isolation period for scarlet fever from twenty-eight to twenty-one days. North Carolina's statutes do not require quarantining of adult contacts, but local health authorities have the right to take such action to protect the public health as may be necessary. Child contacts are excluded from school and public gatherings and quarantined if exposed to measles, whooping cough, scarlet fever, diphtheria, or meningitis. Immune contacts are not quarantined if they can convince local health authorities that they are immune. The health board or health officer has the right to relax the standard practices in regard to contacts but not in the case of the patient who must be isolated for the period specified for each disease.

*Ohio.* No changes other than to add tularemia, undulant fever, foot and mouth disease (in man), milk sickness and trichiniasis to the list of reportable diseases.

*Oregon.* No change other than the adding of undulant fever and coccidioidal granuloma to the list of reportable diseases.

*South Carolina.* The rules and regulations have been changed since 1926 to make them conform in all details to the American Public Health Association Handbook.

*Tennessee.* No changes, except that for septic sore throat, placarding is now required; incubation period for the disease is stated to be three days; patient is to be isolated during clinical course and contacts must not engage in handling food or milk.

*Utah* reports that shortly after the American Public Health Association Handbook (2nd edition) on communicable disease was issued, the rules and regulations were revised to bring them into conformity with the rules as set forth in that handbook.

*Virginia.* Scarlet fever—isolation is reduced from four to three weeks. Diphtheria—isolation is reduced from fourteen days to ten days, after one negative culture. Quarantine on diphtheria contacts, susceptible, has been increased from three to seven days. Whooping cough cases no longer required to wear a green band on the arm. All other general regulations remain as they were prior to 1927. To the list of diseases for which exclusion from school is required conjunctivitis has been added. The health officer may relax the rules requiring exclusion from school for impetigo and ringworm.

*Vermont.* The only changes in rules and regulations since June, 1927, are that "in case of exposure to mumps, measles, German measles, and chickenpox, children may be allowed to attend school for ten days after exposure and should then be kept out of school for one week."

*Washington.* The only diseases for which changes have recently been made in the regulations are chickenpox, mumps, and smallpox.

Chickenpox—case is to be isolated for minimum of fourteen days—other occupants of home are not restricted, if no personal contact with the case; attendance at school is forbidden children not vaccinated within seven years, the reason being that chickenpox may be confused with smallpox.

Mumps—patients to be isolated for one week after swelling of parotid glands has subsided. No restrictions on members of family if no contact with the case. Non-immune children in the family may attend school if the health officers give consent.

Smallpox—isolation of case for minimum of twenty-one days from onset. Members of family who have had smallpox or have been vaccinated within seven years may be released. Susceptible exposures, if do not submit to vaccination, are to be isolated for eighteen days. All persons are prohibited attendance at school, when smallpox exists in a community, unless they have been successfully vaccinated within seven years.

*West Virginia* reports that the only changes made since 1926 in the State rules and regulations have to do with the following: (1) Additions to the list of reportable diseases, such as tularemia; (2) prohibition of persons who have had typhoid, paratyphoid, or dysentery from handling foods; (3) carriers must be kept under observation as long as they continue to be carriers; any change of address of a carrier must be reported by him; (4) the health officer is declared to be the only one having authority to release from isolation, quarantine or observation; cases of diphtheria must show two negative cultures for release or where cultures are not practical twenty-one days from the onset of disease must elapse. Typhoid cases are not released from isolation until feces and urine are found free from typhoid bacilli.

*Wisconsin.* Undulant fever and tularemia are made reportable, but neither isolation nor quarantine is required; whooping cough rules were modified—placard may now be removed in four weeks from date of report, providing whole period placarded is not less than six weeks from the beginning of catarrhal symptoms. All children in the family and all contacts showing catarrhal symptoms are to be quarantined.

There have been no changes in the rules and regulations of the following States since 1926:

Alabama
Arkansas
District of Columbia
Florida
Georgia
Idaho
Indiana
Louisiana
Maryland
Mississippi
Missouri
Nevada
New Hampshire
New Mexico
North Dakota
Oklahoma
Pennsylvania
Rhode Island
South Dakota
Texas
Wyoming

## RULES AND REGULATIONS EXISTING IN SOME STATES GOVERNING CONTROL, WHICH STATE HEALTH AUTHORITIES THINK SHOULD BE DISCONTINUED OR REVISED

*Alabama* suggests that fumigation which is no longer practiced in that State might be done away with in general; that smallpox might well be eliminated from the list of isolatable diseases; and that placarding which is a warning should be retained as one of the general measures for communicable disease control.

*Arizona.* The opinion is offered that isolation for mumps, influenza, and measles should not be required as the danger from the diseases may largely pass before the case is diagnosed.

*Arkansas* considers that the greatest need is not in changes in regulations but the providing of adequate machinery to insure more uniform compliance with existing regulations. The practices being followed in that State are said to be determined not by inherited prejudices nor public opinion, and can be adjusted according to the best judgment on control methods. The State is desirous of having more information on the best method of controlling meningococcus meningitis as the culturing of contacts is considered to be uncertain and misleading.

*California* raises two questions: (1) Should the mild cases of scarlet fever which are of short duration and are so common, be isolated for the full period of twenty-eight to thirty days; and (2) should the mild cases of smallpox (alastrin type) which are so prevalent be isolated when vaccination is so readily available? The implication is that there should be some relaxing of the present rules in regard to both these diseases.

*Colorado* states fumigation is given little attention, although mentioned in the rules, and stress is laid upon disinfection and cleaning.

*Connecticut* states that its present rules in general seem satisfactory. It is suggested: (1) That the venereal disease problem might be better handled if all positive cases were reported by name; (2) that more extensive and intensive work should be done in searching out carriers of disease among food handlers; (3) that to prevent rabies, all stray dogs should be destroyed for if the disease was limited to dogs owned by residents, the disease among animals would be greatly reduced.

*Delaware* suggests that so far as present administrative methods are concerned, it might be better to let chickenpox, German measles, mumps, and the type of scarlet fever now common, alone, once the diagnosis is established; and asks why should the few individuals we know are infected be penalized by having to follow the routine laid upon them, to no benefit? Such procedure only causes disrespect for the regulations which are worth while. Placarding, it is thought, will soon go the way of fumigation except for certain diseases, and will be used then only as directed by the health officer.

*Florida* considers that its rules are pretty well up-to-date, and no suggestions are made as to desirable changes. The present rules are in accord with the rules set forth in the American Public Health Association Handbook.

*Georgia.* No suggestions as to changes advisable in the local regulations are offered. These regulations do not recommend fumigation (except for cholera, dengue, and yellow fever) at the termination of a case of communicable disease but, where advisable, terminal disinfection is recommended, which means cleansing, airing, and the disinfection or destruction of materials presumably infective, when a case has terminated. The regulations are very much in line with the American Public Health Association Handbook. The general practice is to require isolation for the clinical course or the presumably infective period of a disease rather than to arbitrarily fix upon a certain number of days for isolation of the infected person.

*Idaho* offers no special suggestions but states that the State Legislature at its last meeting made a change in the quarantine law which gave local health officers authority to release communicable disease cases from isolation within a shorter length of time than that prescribed by the statutes if such action is considered safe and is approved by the county physician.

*Illinois* states fumigation should be eliminated from all regulations, and State quarantine rules should be made uniform.

*Indiana* thinks, "Vaccination against smallpox in children and as a requisite for admission to school should be adopted," and that isolation against the disease should be discarded. Fumigation should be discarded and emphasis placed on continuous disinfection, on cleanliness and on prompt destruction of all presumably infected material. The closing of schools and places of business as preventive measures should be discarded, to be replaced by systematic health supervision and inspection.

*Iowa* suggests that certain changes should be made in the present State code—by adopting the now generally accepted definition of "isolation," by eliminating "fumigation" as a requirement for disinfection, and by making it unnecessary for local boards of health to report to the State Board of Health the release of any case from isolation.

*Kentucky* has recently revised its regulations and offers no suggestions for additional changes.

*Louisiana* states that regulations concerning measles (presumably Louisiana regulations) should be changed, but does not specify what the changes should be. The present regulation calls for reporting and placarding and requires isolation of the case for eight days from onset of disease.

Contacts unless immune through an attack within five years are to be excluded from school for fourteen days from last exposure.

*Maryland* offers no suggestions as to desirable changes in rules and regulations.

*Massachusetts* states that the minimum requirements of the State Department of Health are only recommendations, as the Department has no authority to enforce rules locally. The suggestion is made that very definite distinctions should be made between immunes and non-immunes in regard to restrictions and that the whole question of placarding (the value of which is doubtful) should be studied, in order that a more definite evaluation of it may be made.

*Michigan.* No suggestions were made as to desirable changes in the present State rules and regulations, which are of recent date and definitely state that terminal fumigation is not required nor recommended, except the use of sulphur fumes in cases of insect-borne diseases such as typhus fever. Concurrent disinfection is advised generally, rather than dependence on terminal disinfection. Regulations govern carriers of virulent diseases, and differentiation is made between immune and non-immune persons in the restrictions imposed; differentiation is made also between adults and children where the disease is principally of children.

*Mississippi* suggests that there should be no requirement of isolation for cases of smallpox, and that fumigation which has been discontinued in that State should be discontinued in general.

*Nebraska* believes, "That there is no reasonable excuse for State Health Departments requiring routine isolation for smallpox, as experience and history show definitely smallpox epidemics to have been controlled by successful vaccination." Individual States hesitate to abolish the quarantining of cases because "there has been no concerted action by a number of States acting in unison."

*Nevada* thinks the State regulation requiring fumigation as a method of terminal disinfection might be deleted.

*New Jersey.* No changes in the present rules are thought necessary. Fumigation is not mentioned in the State rules;

the recommendation is that concurrent disinfection where necessary be carried out.

*New Mexico.* The general consensus of opinion among health officers of the State is that practically all control measures for measles, chickenpox, German measles, and possibly mumps, should be abandoned as not worth the expenditure of time and money. The exceptions made are that for measles there should be a placard to warn parents of young children, and that every case of chickenpox and German measles should be investigated, but only to definitely determine diagnosis. For mumps, it was considered that exposed susceptible children might be allowed to attend school for two weeks after first exposure. It is thought that these modifications in the rules could be safely made and thereby much time might be saved and inconvenience avoided.

*New York.* It is suggested that the rules and regulations in all States be modeled after a standard whereby minimum restrictions are placed on cases and contacts of diseases with low fatality rates. Placarding for such diseases might be discontinued and fumigation abolished for all diseases except those which are insect-borne.

*North Dakota* considers that a compulsory requirement that all school children be vaccinated against smallpox and immunized against diphtheria would be of material benefit, and in certain communities where water and milk supplies are of uncertain sanitary quality, typhoid vaccination might be included.

*Ohio* suggests that, "All rules and regulations in regard to fumigation after quarantine of communicable diseases should be nullified."

*Oklahoma* thinks that gaseous fumigation at the termination of isolation should be discontinued. This is not now a requirement of the Oklahoma State Department of Health.

*Oregon* believes that while fumigation should be discarded, thorough disinfection should be insisted upon.

*Pennsylvania* states that its quarantine regulations have been pretty well purged. They are regarded as based on public health principles rather than concession to public opinion. Certain paragraphs in reference to placarding and reporting all cases of pneumonia are perhaps exceptions, but it is the intention of the advisory board to modify these.

*Rhode Island* states that certain revisions should be made in the State rules but does not define what the nature of the revisions is likely to be.

*South Carolina* reports that its own regulations are in accord with the American Public Health Association Handbook and suggests no changes.

*South Dakota* suggests that rules requiring fumigation might be eliminated.

*Tennessee* suggests that the outstanding need in the control of communicable disease is the standardization of practice in the various areas of government. The great diversity of regulations as to the handling of the same disease in different areas is awkward, and does not impress favorably an informed laity.

*Utah* thinks some modifications might be made in rules to give more liberty to adult members of family in the case of children's diseases, and that fumigation as a method of disinfection should be discarded.

*Virginia* states that the rule requiring quarantine after scarlet fever until peeling of the skin has ceased should be discarded.

*Washington* thinks fumigation should be discontinued and disinfection should always be associated with thorough cleaning, airing, and so forth.

*West Virginia* reports that fumigation has been entirely discarded and less emphasis than formerly is now being placed on quarantine and placarding. Emphasis, however, is placed on the necessity of isolating the infective case and those in immediate contact with him.

*Wyoming* suggests that vaccination against smallpox should either be made compulsory, or have no rules in regard to it, as the present rules are generally unsatisfactory.

*District of Columbia* states that certain modifications or changes in the rules might be made to advantage but no definite proposals have been formulated.

The following States offer no suggestions in regard to desirable changes in their regulations:

Kansas
Maine
Minnesota
Missouri
Montana
New Hampshire
North Carolina
Vermont
Texas
Wisconsin

Note.—In reference to comments on smallpox control in Alabama, Indiana, Mississippi, and Nebraska, this Committee considers that isolation, preferably in a hospital, as well as vaccination, is necessary in the control of virulent smallpox.

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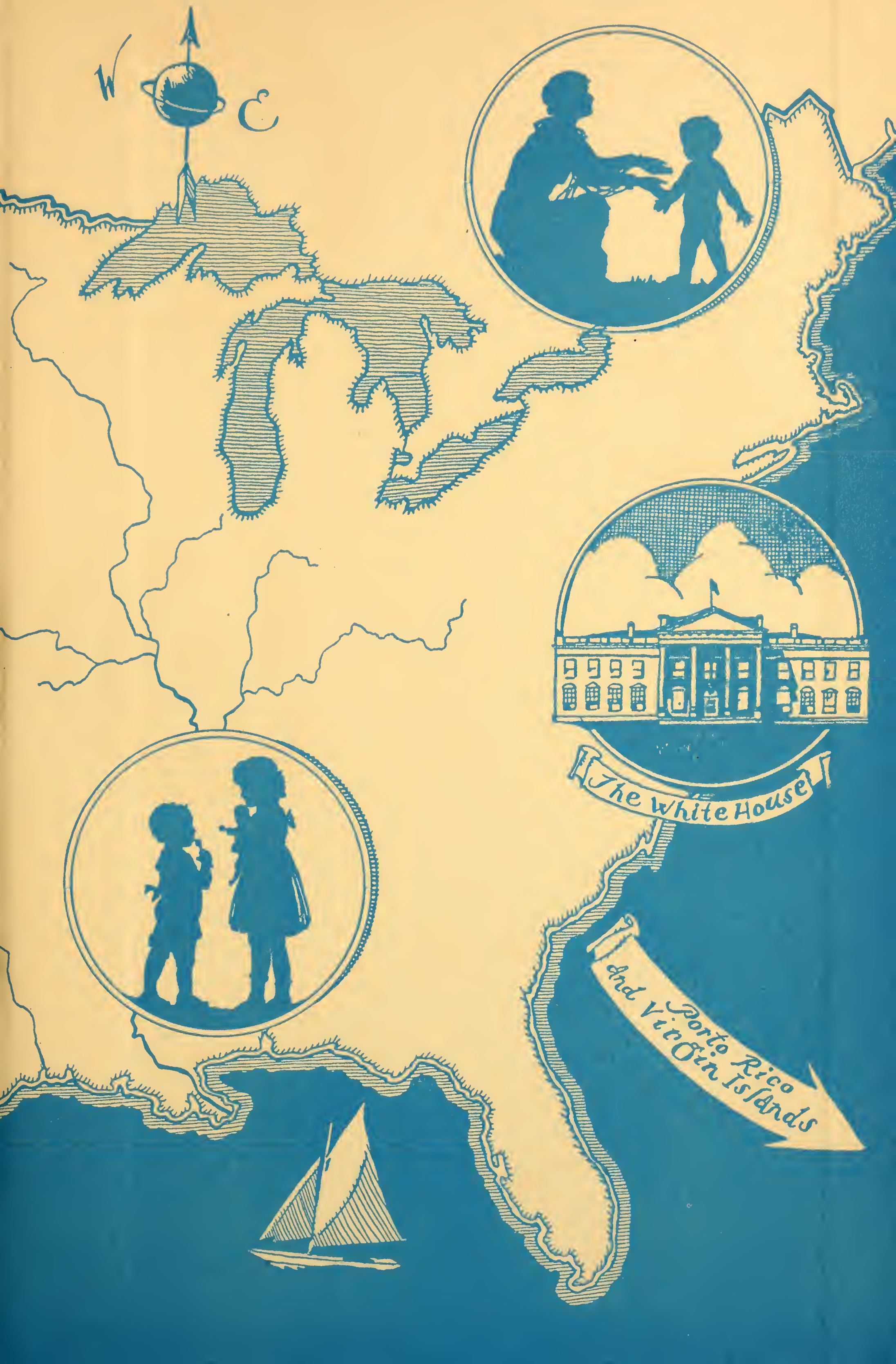
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